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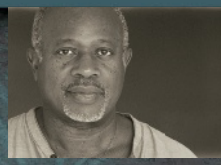

DAVID SANCIOUS
ON PLAYING THE KORG KRONOS WITH PETER GABRIEL

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ON THE GEAR OF THE FOO FIGHTERS AND WALLFLOWERS

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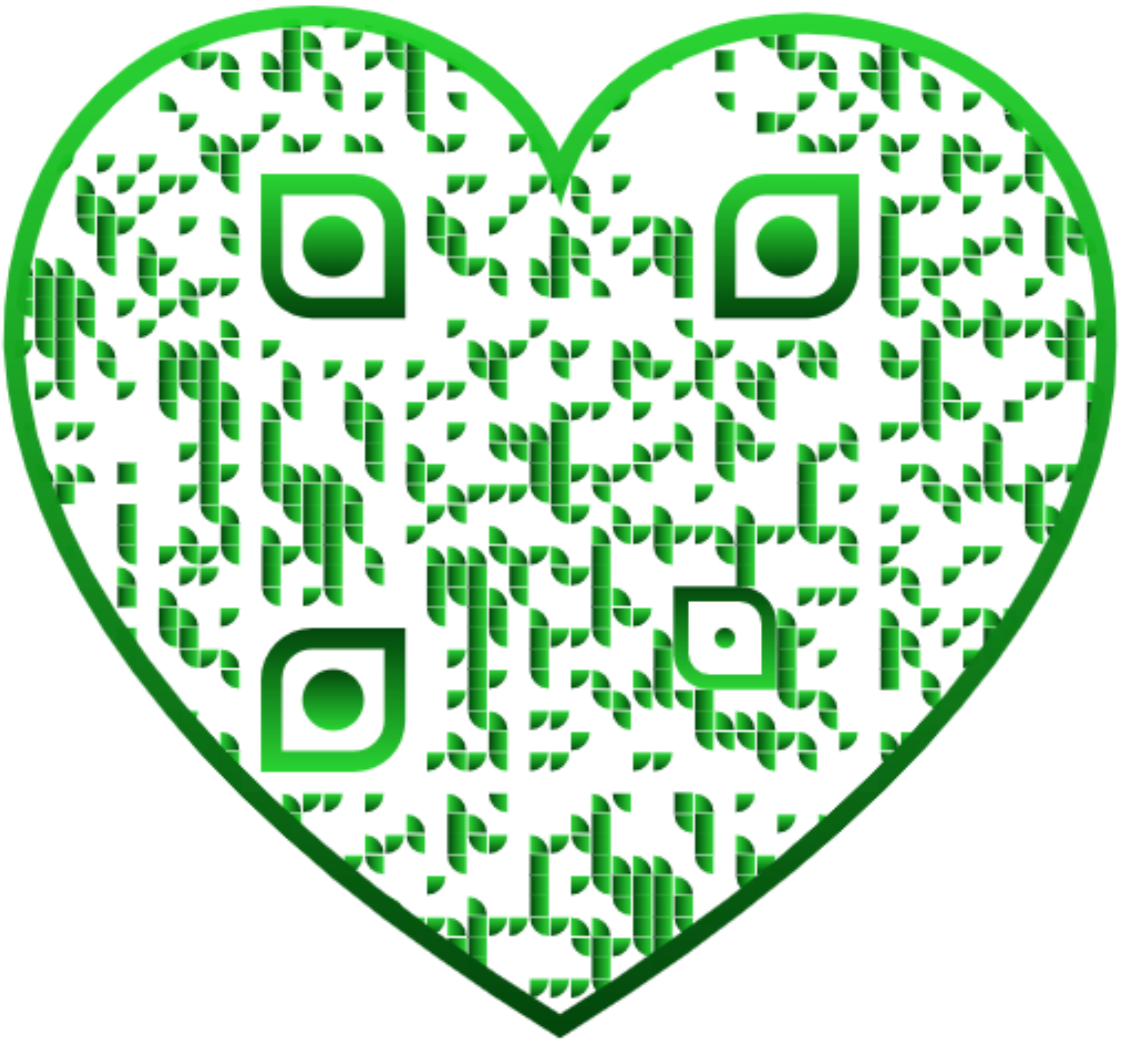

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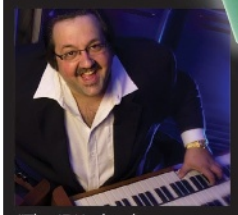

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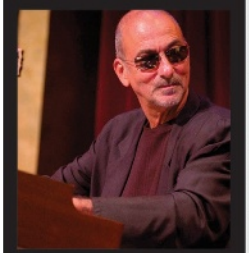

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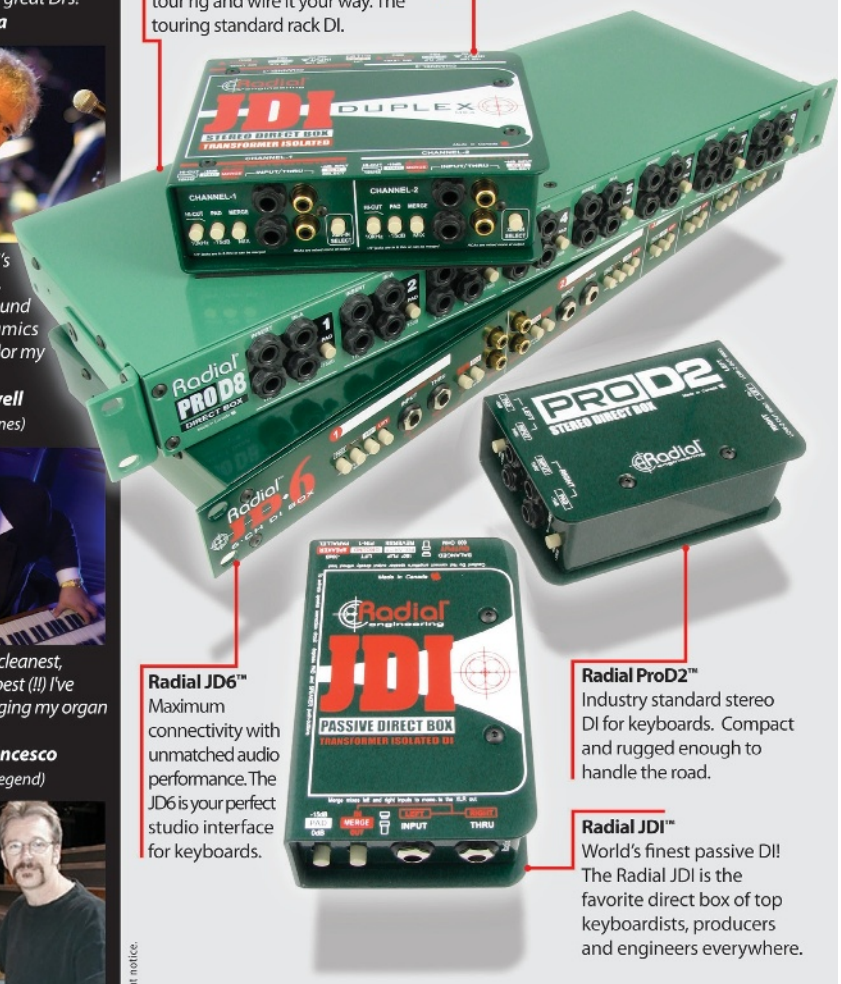

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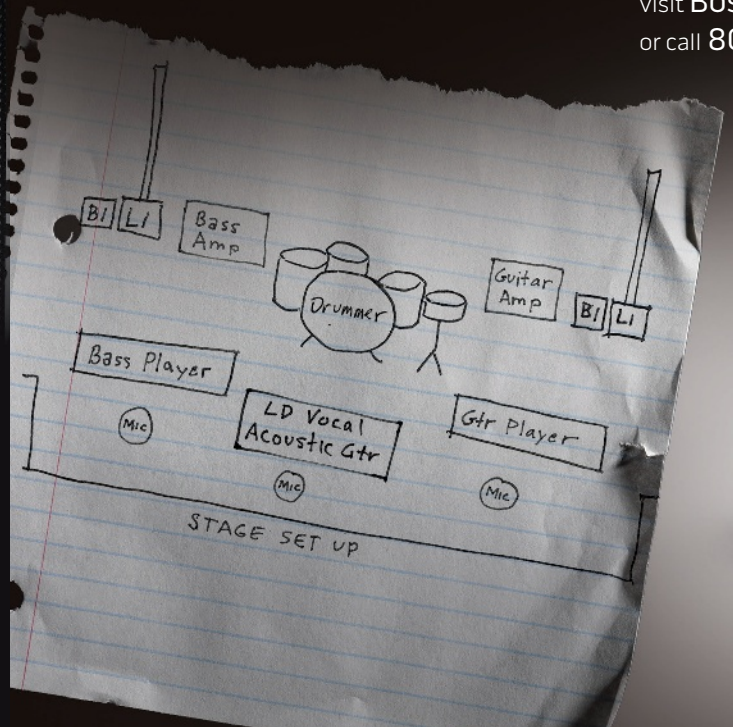

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Editor's Note

The sound of the Hammond organ through a Leslie speaker was the earliest childhood experience I can recall of hearing a keyboard other than piano and thinking it sounded incredibly cool. This was not because my mother, a classical pianist, was buying Jimmy Smith or Steppenwolf albums. It was because my grandfather repaired vending and game machines for local bars and music venues, and for some reason, a Seeburg jukebox—with all the 45s still inside—had found its way into our basement where my grandfather had his shop. I think it might have been a repair bill payment.

One of the 45s in it was "Hip Hug-Her" by a band called Booker T. and the MGs, with a rendition of "Summertime" on the B-side. At five or six years old, I had no idea who the MGs were or why they were important. I only knew that I wanted to play like *that*. I did manage to plunk out the melody on our piano, but of course, it didn't sound the same. I asked my grandfather what I was hearing, and being an electronics-savvy guy, he responded that it was a type of organ called the Hammond B-3. "That's what I want for my next birthday!" I exclaimed. I can still see his eyes widening, then rolling.

We didn't get a B-3—it was too expensive and too big for an already crammed small house. But after a couple of years (during which I never let the subject go), my granddad did find a great deal on a Hammond T-series spinet (a descendant of the L-100) that had a single-rotor internal Leslie. When we got it up and running, my phonograph went on top, "Hip Hug-Her" went on the platter, and I proceeded to try to imitate every note, drawbar move, and Leslie speed change over the ensuing weeks—learning what all those things were for in the process and beginning a lifetime fascination with "the sound." In this month's cover story, Booker says that he wouldn't be here without having heard players like Jimmy Smith and Jack McDuff. I most certainly wouldn't be here without having heard Booker.

Stephen Fortner
Editor

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QUOTE OF THE MONTH

If I miss a day of practice, I know it. If I miss two days, my manager knows it. If I miss three days, my audience knows it.
—ANDRÉ PREVIN, RENOWNED PIANIST, COMPOSER, AND CONDUCTOR

THE Keyboard POLL

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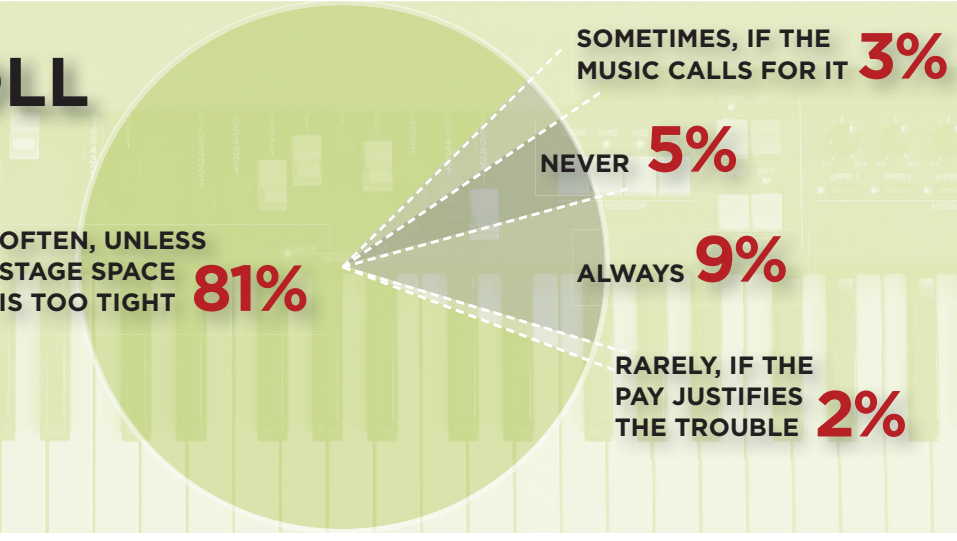
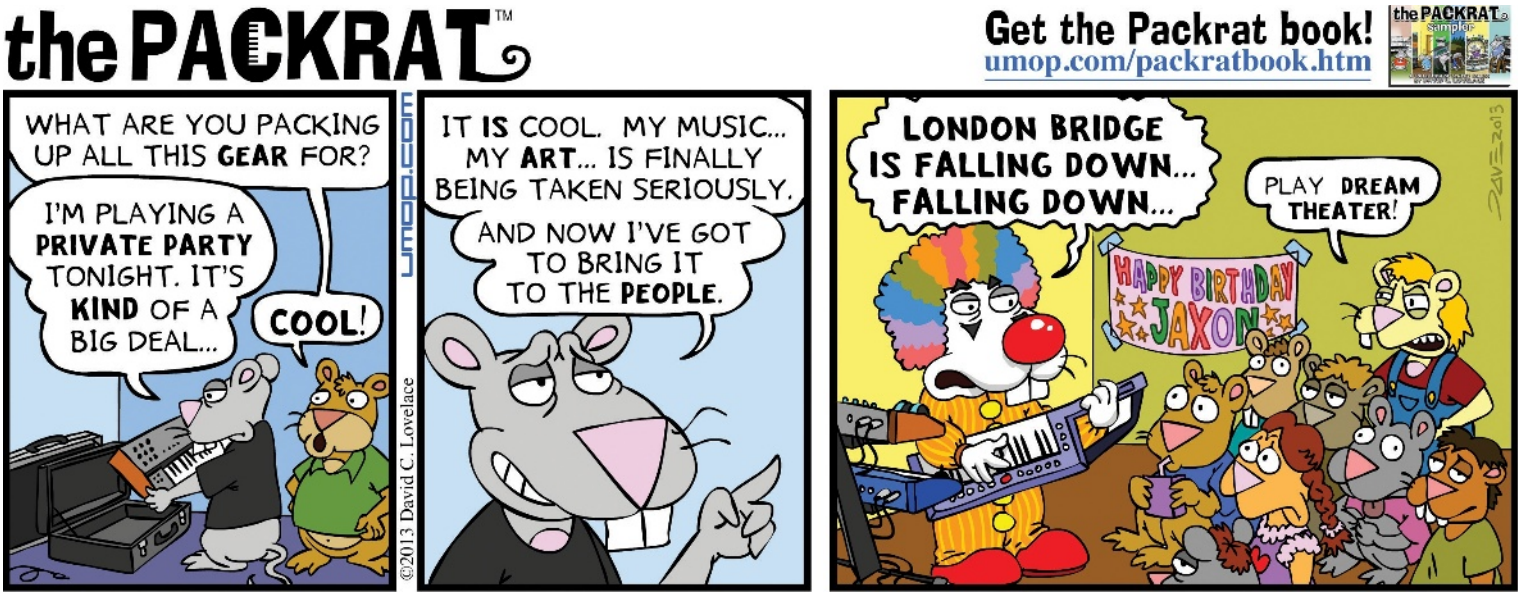
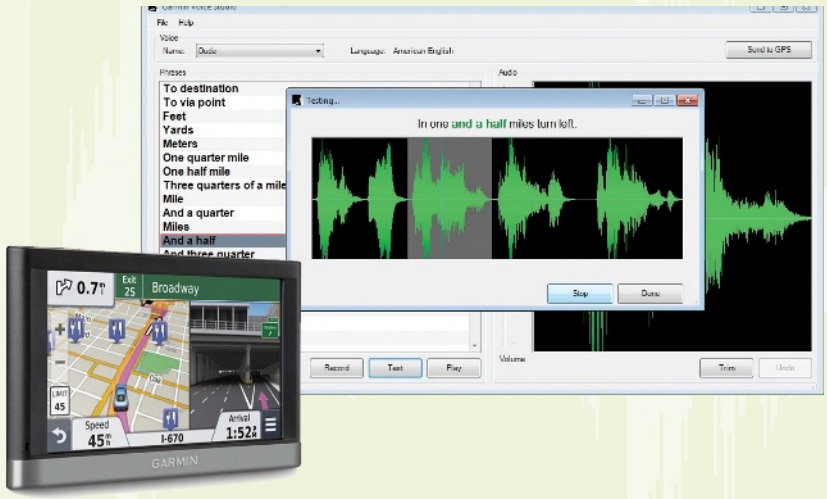




Key Secrets Nav Tunes

Recent GPS navigation units let you import your own audio files to replace the standard prompts like "turn left" and "at the next exit." The GPS then splices those phrases into sentences as you drive around. Wouldn't it be cool, I thought, if each phrase were pitch-shifted to a different note or chord, producing random melodies? So I typed the 65 phrases from my Garmin Nüvi into a text-to-speech synthesizer, rendered a WAV file, and harmonized it with Ableton Live's vocoder. Then I split that track into 65 little WAVs using Rogue Amoeba Fission. Its region-detection feature made that easy: Adjust the threshold, click a button, and out pop 65 WAVs. Fission also injects its own name into the WAV metadata, which prevents Garmin's Voice Studio software from loading the files. Garmin tech support hipped me to this issue, and I used Sound Devices Wave Agent to batch-remove the metadata. The files then loaded fine, and *voilà*—an interactive soundtrack to go! David Battino



My First *Jam with a Blues Singer*. Clay Swafford

Blues piano phenom Clay Swafford has played with and learned from greats like Hubert Sumlin and Pinetop Perkins, but it was one of Clay's hometown Alabama mentors who turned him on to accompanying soulful singers. "Both of my grandparents had pianos and I always played on them, but when I first heard a guy by the name of Wayne Gross, who lived a few miles from me, I was hooked," says Clay. "He could play a lot of Ray Charles and he played boogie-woogie like Albert Ammons." Clay often spent time at his newfound mentor's house, jamming on the keys. "I would start walking that bass line and banging that piano," says Clay. "He might be cooking or doing something around his house, but he would start singing like Big Joe Turner. You could hear him through the house singing, *I got a girl who lives up on the hill, that fool tried quit me lord but I love her still*," he continues, "and I'd be smiling from ear to ear, just making that piano rattle." Hear Clay's powerful chops in action on his new album *Rooster*. | **clayswafford.com** | Michael Gallant

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Booker T. Jones

BOOKER IS BACK. THE LIVING LEGEND, WHO WITH HIS GROUP THE MGs HELPED CREATE THE MEMPHIS SOUL SOUND AT STAX RECORDS IN THE 1960S—AND USHERED IN THE IDEA OF RACIALLY INTEGRATED BANDS IN THE PROCESS—HAS BEEN GETTING SO MUCH WELL DESERVED ATTENTION OF LATE THAT IT FEELS LIKE HE NEVER LEFT.

BY STEPHEN FORTNER

His 2009 comeback *Potato Hole*, a rock-influenced project featuring the Drive By Truckers and Neil Young, won the Grammy for Best Instrumental Album. The phone started ringing off the hook, and one of those calls was Roots' drummer Questlove, who then produced Booker's 2011 album *The Road from Memphis*. Boom—another Grammy.

Recently, Booker musically directed and played B-3 on PBS' *In Performance at the White House*." The episode, which aired April 16, celebrated Memphis music and featured artists such as Mavis Staples, Queen Latifah, Ben Harper, and Justin Timberlake, not to mention one very delighted U.S. President.

Now, Booker T. reaches for new creative heights on *Sound the Alarm*, a musical time machine trip through what real soul music should sound like. Booker co-produced the album with Bobby and Iz Avila of the Avila Brothers, and collaborations include Mayer Hawthorne, Estelle, Anthony Hamilton, Sheila E. and Poncho Sanchez, Gary Clark Jr., and Bill Withers' daughter Kori. Just before he played two shows at San Francisco's Yoshi's music club—where he not only delivered his crowd-pleasing B-3 hits but also played guitar and sang in a baritone that held the audience rapt—I had the privilege of catching up with Booker about the new record, where he's been, and where he's going.

We spoke in 2009 as *Potato Hole* was being released. Since, you've won two more Grammys and gained a whole a new generation of listeners. Back in 2009, did you imagine your resurgence being this huge?

No, I didn't care about commercial success. I just wanted to play. But I've been fortunate because after the shows—when very often I meet people—every other person will say, "This is my son" or "This is my daughter." They're bringing their kids, both overseas and here. Some of them are actually very young; some are teenagers, 20-year-olds, so that's great. It's kept me going that they're playing my records for their kids, who are asking me questions about them.

***Sound the Alarm* is on the Stax label, which you were a big part of in its early days in Memphis. What can you tell us about its rebirth?**

That was Norman Lear and John Burk at Concord rejuvenating the whole thing. They were looking to bring me in the whole while, and I didn't know that, but now they have. When I walked into the office it was like, "Where've you been?" They really made an effort to make me feel good. Not that [previous label] Anti- wasn't good for me, but this is different.

How did music-directing the PBS White House special come about?

The producers had seen a show I did and they wanted me to do my thing there. It turned out to be a formidable task. I'd played at the White House before, for President Clinton, but the security now is unbelievable. Ken Ehrlich's

Listen to Great Players. I got my inspiration from hearing Quincy Jones' arrangement of "One Mint Julep" and Ray Charles playing on it. That's when I heard "the sound." Ray didn't care directly about the Hammond, but he defined a sound. Then I heard Bill Doggett. That was the funkiness. Then I heard Jimmy Smith and that was the "Oh my God." Jack McDuff was the *attitude*—just *bad*. If I hadn't heard those people I wouldn't be here. Next up, I want to go to New York and hear Akiko Tsuruga.

Curl Your Fingers. If you catch a basketball with your fingers splayed flat out, you've had it. You have to curl your fingers. It's the same on the keyboard. You have less reach, but because of the way the hand is made, you get more strength and dexterity from the curl.

Change Leslie Speeds Tastefully. I tend to like straight tones but my philosophy is that a straight tone doesn't mean anything unless it's animated with the Leslie. Just like music doesn't mean anything without silence. It's the same with the fast Leslie—the tremolo. Sometimes I use the tremolo in addition to the chorale (slow speed) for the full effect.

Find Your Voice and Stick With It. You need to have this crazy faith in your own voice somehow coming through. When people know it's me when I'm playing the organ, that's a phenomenon, because I'm basically imitating Jimmy Smith and Ray Charles and Bill Doggett. In my mind, I'm imitating but to others, it sounds like *me*. I learned Bill Doggett's solo to "Honky Tonk" and Ray Charles' solo to "One Mint Julep." Self-belief is important for a Hammond player because it's an unwieldy instrument and an unlikely solo instrument, but the people who've stuck with it have made successful careers.

production company brought all their people and gear from the West Coast, so it was pretty huge. Big cables running into the east room, plus the musical equipment, but it ended up being fun. President Obama and his wife enjoyed the music and all the congresspeople and senators that came just relaxed and had a good time.

You played President Obama into the room with "Green Onions." Who's idea was that?
It was his idea. We'd played a fundraiser in San Francisco a few years back. The President walked into the room, I played "Green Onions," and he said, "I want to make that the new 'Hail to the Chief.'" [*Laughs*.]

To you, what is the Memphis soul sound as contrasted with, say, the Motown sound or New Orleans sound?
Well, the Memphis sound is something that was too big and broad to capture in that one-hour show. You had Jerry Lee Lewis, Elvis, Al Green . . . just too much. The show wound up focusing on Stax—I guess because of me—but it could easily have been four hours long. So much Memphis music got ignored by the mainstream, whereas the Motown sound was so identifiably Motown—the Temptations, the Four Tops, Diana Ross and the Supremes, and you still have kind of basically the same sound. You don't have the difference between Elvis Presley and Ann Peebles. Then there was all the Gospel stuff that started in Memphis that got overlooked, Joe Dukes, all those people.

Who came out of Memphis that you think should be a lot more recognized than they are?
For that show I called Bobby Manuel to play rhythm guitar. He's an example of undiscovered Memphis talent. Steve Potts, Bobby Manuel, James Alexander—that was the rhythm section. That's why the music sounded so authentic.

Johnny Ace is one of my influences. Ann Peebles. Willie Mitchell. I wouldn't be here if Willie didn't play. He was my very first mentor. That's how I got to meet [founding MGs drummer] Al Jackson Jr. I was playing bass and Al was behind me and Willie was there. Plus, he paid me some money! [*Laughs*.] Willie is in the Memphis Music Hall of Fame, but he should be in a national hall of fame. He's done so much for music just by mentoring young musicians. He's like Quincy Jones, who will spend his own money to bring a young musician up. He did that for me.

How did meeting Quincy Jones come about?
He'd heard "Green Onions" and invited me to New York and took me downtown to these clubs. That was the first time I'd heard music played like that—the Thad Jones/Mel Lewis Band, in 1962 or '63. When I went to California and was trying to write music for the film *Uptight*, he showed me how to coordinate beats per minute with frames per second. At that time we had to because everything was on 35-millimeter film and to edit a soundtrack to the picture, you calculated your tempo by the number of frames per second. Quincy sent me those charts. He was just a generous guy. I was so glad when he was inducted into the Rock and Roll Hall of Fame. Sometimes people just have to give to young people that don't have. Willie Mitchell was like that. I wouldn't be here had it not been for him.

On that topic, is there any new musician on *your* radar?
The guitarist, Gary Clark Jr. We were doing a demo for iTunes at Apple in Cupertino. I hear this music coming from downstairs. It's Gary and a drummer, and I go down there and give him my phone number and I tell him, "If you need anything, call me." He's so humble. He was already a star and I had no idea. But I found out that he was from Austin and that he'd played with all the guys down at Clifford Antone's blues club. [*Clark plays on the track "Austin Blues" on* Sound the Alarm. *—Ed.*]

You performed with legends like Mavis Staples at the White House event, and also with Justin Timberlake. What impression did he make on you?
Justin is a true Memphis musician. He had the vibe, and the communication was easy, with no need for many words. He's a true professional. You know, he comes from a part of Memphis that I wouldn't have known about in the early days, and he wouldn't have known about mine. Memphis was segregated. It was a minor miracle that Steve Cropper and "Duck" Dunn and myself and all of us came together at Stax on McLemore Avenue. That geographical juncture happened because Whites were moving out and Blacks were moving in. Don Nix was another guy who tried to mix it up with the Blacks and the Whites, kind of like Cropper.

A reader wrote on our Facebook page that you play with great economy—few notes but tons of expression—and wanted to know about this approach.
It comes from what I did right and what I did wrong for my childhood music teacher, Mrs. Elmertha Cole. Her paradigm for music started with Bach's *Well-Tempered Clavier*. You talk about minimalism—Bach is the essence of musical sentences that use as few "letters" as possible. Not only is this coming from an entertaining standpoint, but also a spiritual standpoint. That has stuck with me from ten or 11 years old: Don't play any note unless it has some

type of significance. There was my mother, too. She was a very soulful and emotive piano player. She played Gospel music and Chopin—everything classical but also church music. But Mrs. Cole is the one that taught me organ, so I owe her all that. Mrs. Cole was and still is my indicator of what's right and what's wrong in music.

Mrs. Cole's house was also where you first heard the Hammond, correct?
Yes, and again, the first notes I heard her play on organ were Bach. An interesting thing about the Hammond is the dissent between Laurens Hammond and Don Leslie—because the organ and the speaker were a marriage made in heaven. The long, sustained note on the organ doesn't mean anything until the Leslie kicks in and starts to move the air. That's historic.

Some songs on *Sound the Alarm* are very contemporary. Others sound so vintage they could be from the Stax archives. Was this conscious or did it just come out of the different collaborators?
It was the collaborations—Iz Avila and his Akai MPC, for one thing. You know, he's a Stax disciple. I think the record sounds like the natural evolution of Stax—like where Stax should've gone had not it had the hiccup of bankruptcy and all that. It's picking up where it left off.

On the title track to *Sound the Alarm*, how did working with Mayer Hawthorne come about?
I was introduced to Mayer by Daryl Hall up at his house. It was an eye-opening day for me to find a young, blue-eyed soul guy that could hang with Daryl Hall. I was just shocked. We rehearsed those songs maybe one time.

What was the sample at the beginning of someone saying that you "need no introduction"?
That's Albert King. That was from a show in Los Angeles that we did just before the Watts riots. Iz Avila threw that in there with his MPC.

"Fun" is perhaps the most vintage-sounding track. What was its inspiration?
"Fun" was one of the Avila Brothers' ideas. It's different from anything on the album. It's very much a '60s song. It's like a Four Tops type of thing.

Then you have a big contrast, "Can't Wait" featuring Estelle, which is almost an electronica track. Did you play any synths on it?
I did some of the background, but that sound—I don't know if you can tell, but it's actually a Hammond. It's like what I did on "Melting Pot," where the reverb appears.

What's the technique?
I get the reverb going and then I back off on the expression pedal. I play, bring the volume back, and then you hear the reverb sound—the tail—without the sound at the start. So that makes the chords a little "behind." For that song, if I play the chords on time it doesn't *sound* on time.

Another unusual Hammond tone is on the Kori Withers duet "Watch You Sleeping." The motif is sort of Japanese. . . .
It's all fourths. One little drawbar—the eight-foot—and real soft. But I'm going like this. [*Plays fourths with both hands in contrary motion.*] To me it sounded gentle, like the subconscious, like sleeping. That was how the lyrics came.

How did you and your son Ted get together on "Father Son Blues"?
We had an apartment in West Hollywood, and one day, Ted was practicing guitar. He loves Joe Bonamassa and would watch him on TV, and one day I thought, from the bedroom, that I was hearing Joe on the TV, but it was actually Ted! That's when I decided to put this tune together for him, as he's a great player and he approaches guitar like training for a sport. Basically it's just me trying to teach my son what it was like in 1950 to play the blues in a club. The basic riff in that song was what we played on Beale Street *all* night long!

It's also the tune where you stretch out the most on the organ.
I know—even though it's in the key of *B*. How weird is that? How do you play blues in *B*? The blues scale doesn't fall under the fingers well in *B*.

Why *B*, then?
It sounds great. It rings. That's why I used *D*♭ for Albert King for "Born Under a Bad Sign" as opposed to *F* or even *C*. *D*♭ is like *G*♭, those certain keys. They're hard to play in but you get that sound. Different instruments ring better in certain keys. There's something about the way the world is made, the way the keys go through the air. Some are more effective than others.

What's in your home studio these days?
I still have my Hammond B-3, of course. Ableton, Pro Tools, and Sibelius in the computer, and I'm using a Novation [SL Mk. II] controller. We just moved, and I haven't really got it set up yet.

Do you tour with a B-3 or portable, or is it on your rider for backline?
I have a New B-3 Portable and Leslie 3300 speaker—I love the 3300, by the way—but these days I'm playing so many places that I have to rent at every place. We might jump from Vancouver to Paris. I've stayed on the player's side of the organ so much that I've only just gotten around to

studying how it works, but vintage B-3s need to be fixed more and more now, even the good ones. So I've been opening up *Beauty and the B* by Mark Vail and studying how the instrument works.

Are there any songs where you prefer playing piano rather than organ?

I wanted to play Leon Russell's "A Song For You" the other day for my wife Nan. Leon has these thirds and sixths at the beginning, and on the organ, you don't have the ring that you have on the piano. The intro to "A Song For You" on the organ is just not as effective. You can do it and walk down and you get to that final minor chord in the intro, and then you start to sing. The emotional effect is lost on the Hammond if you do that. But then you can do things on the organ that you can't do on the piano.

Didn't you also encounter Leon Russell early in your career?

When I had just gone from Memphis to California, emotional because I'd left my home, he was the first person I met. He was generous, just like Quincy Jones: "Come to my house, use the studio, use the piano." He's completely open and he's writing all these song and he's the session player of the century. He was playing on *everything*—and he just let musicians stay at his house. He was working on "A Song For You" when I was around, so the song still means so much to me. I'll probably do it tomorrow night at the gig. Leon is just a national treasure.

The Hammond was once sold as a pipe organ alternative for smaller churches. Did you develop any organ technique playing in church as a young man?

I did play in church. There was nobody else to play for them. I had to be there, in a suit and tie. The church was just a couple blocks from the club, too. I'd leave the club at 4 A.M. and get to Bible class at 9. My church, though, was an African-American Methodist church where the service was more formal compared to things like the Sanctified Church. We played classical religious music in the church—hymns.

What type of project would you like to do next?

Well, if you walk into my studio, you'll see the score for Beethoven's Ninth right under the computer, and that's what's on my iPod. I'm not saying it will necessarily be the next project because there are so many other things and new musicians that I love. At the core, though, is the instrument of all instruments: the orchestra. In my dreams there are pieces I haven't captured yet—and that's what I originally trained to do. It was hard because you had to have score paper all over the place and your hand would get tired from writing parts in different key signatures. Now that they've refined Sibelius, anything is possible. I recently played with the Memphis Symphony, and I'd written out a whole arrangement of my tune "Time Is Tight" for them, and I just caught the bug.

Do you see yourself composing for orchestra? Conducting?

I still have to learn what the masters were teaching. Once I study Beethoven and Brahms more, then I'll have a basis to write my own music. I think I might be able to conduct my own music. You have to know a composition very, very well to conduct it. So, *possibly*. Because I come from Memphis, I think I'd have something unique to offer. This wouldn't be commercial at all. But it'd be the crowning point of my life to be able to put some of my ideas down for orchestra. The orchestra would be my Lamborghini.

You've said that commercial success hasn't been a priority. But is it fair to say that it has found *you*—again—and is finally letting you do things your way?

I think that these days I'm one of the privileged few to have a recording contract, to have the opportunities I have. I'm a privileged guy to be able to play shows for people all over the world. I'm getting opportunities that not many people get. There are people who have my abilities who don't have those opportunities. I meet them—great musicians not making enough money. Music is suffering. So I feel very fortunate.

What would you say to a talented musician who's starting out and values artistic integrity in the way you do?

My wife Nan and I just moved to Tahoe, and I wanted to get a library card. I walked into the local library, and André Previn's book [*No Minor Chords: My Days in Hollywood*] was right there. He was always an inspiration for me—I first learned about him in the '60s, so I checked out the book. His observations about being commercial versus following your own craft, and why he left Hollywood, are just searing. He and I have some things in common. He came from somewhere else—Germany in his case—and for a while Hollywood was the only place for him. He worked his tail off there for very little reward, and finally followed his own heart when he started to conduct and write for orchestra. He also loved jazz. To be himself *and* make money was a big challenge. He got a booking agent to book him around the world with all these orchestras, ended up losing money on a lot of gigs, and his hotel room was tiny. That's the same thing we went through. He had to pay his own way, but he was doing what he loved. ♫

Watch Booker's performance at the White House in its entirety.

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RAMI J

AS A MODERN ROCK KEYBOARDIST, RAMI JAFFEE HAS ARTFULLY BRIDGED THE gap between vintage and future sounds. His career launched in the '90s with the Wallflowers, and when the band went on hiatus he began a steady gig with the Foo Fighters. Jaffee has also become a go-to studio musician, his playing having graced the albums of Grammy winners and rootsy indie acts alike. Born and raised a Los Angeles native, Jaffee's roots in the music scene go back to high school. After four albums and tours with the Foos, Jaffee has stepped back into those roots, rejoining the Wallflowers for their new album *Glad All Over*.

How did the Wallflowers reunion come about?
The 'Flowers decided to take a break shortly following "*Rebel, Sweetheart*," our fifth record. One forgets that this biz can be a mind-wrecker. Jakob Dylan and I had been pretty deep into a 16-year run at that point, so taking a break to recharge our personal lives seemed normal. What we didn't realize is that being the kind of musicians we were, we were going to be drawn to working. Jakob set off on a couple of solo records and I set off on about a thousand projects—producing some artists, playing keys for dozens more. One of those records was the Foo Fighters' *In Your Honor*. Dave Grohl asked me if I'd do an acoustic tour following that, and here I am four records and four world tours deep. Definitely a quality problem to have! Even before our break, though, the Wallflowers were on the brink of making a great and fun record.

What keyboard sounds characterize your work on the new Wallflowers album?
A funny fact that wasn't really deliberate is that on this record I stuck to using organs and pianos only, which I did on the first two Wallflowers records. For me, Mellotrons, Chamberlains, vibraphones, old Casios, and silly toys are all in the job description. But my peers have always made it known to me that Hammond and Farfisa organs and old acoustic and electric pianos are the "Wallflowers sound."

When I heard we'd be tracking at [Black Keys guitarist] Dan Auerbach's Easy Eye Sound Studio, I read that there were plenty of funky keys so I just showed up. There was supposed to be a Hammond B-3 and an "upright grand" piano among other toys, but when I arrived I checked out the Hammond and found it was some funky A-102 with curved legs. [*That would be an A-100 in the lovably hideous "French Provincial" livery. –Ed.*] I asked to pop on a spring reverb and it was done in a day or so. I was very pleased at the results, to say the least.

Mick Jones of the Clash played on the album. How did that come about?
As much as the tracks Mick played on sound planned, it was really an afterthought. Jakob had met him many times and rang him up. What I loved about this record is that we sat around Dan's studio lounge playing albums of all our favorite stuff during meals and that really

AFEFE RETURNS TO THE WALLFLOWERS

BY ROBBIE GENNET

brought the vibe together. Someone would put on a Motown record, then the Stones, then the Clash, and so on. I know it's almost textbook, and yes, we did that 25 years ago, but why do bands abandon a creative flow that's as simple as that?

What are the live gear differences between the Foo Fighters and the Wallflowers?

With the Foos, my rig changes every year. Dave Grohl's orders are "Bring all your favorite s***. In fact, bring *all* your s***!" Of course, seven years ago when I set out on their acoustic tour [*Skin and Bones*], I did just that—there was a Hammond B-3 and Leslie, upright piano, pump organ, accordion, Mellotron, Wurly 200A, Casio SK-1 through an Electro-Harmonix Memory Man, and more. But I've changed it up depending on the tour. At one point, most of the songs I played on were on this stage that slowly dropped out of the arena roof mid-crowd, so the Hammond wasn't allowed due to weight. I ended up with a Nord Electro. I got pretty good at making it do what I wanted. In fact, now I pop one on the piano of my Wallflowers rig to replicate some dirty Wurlies and Farfisa so I don't crowd stage right as much.

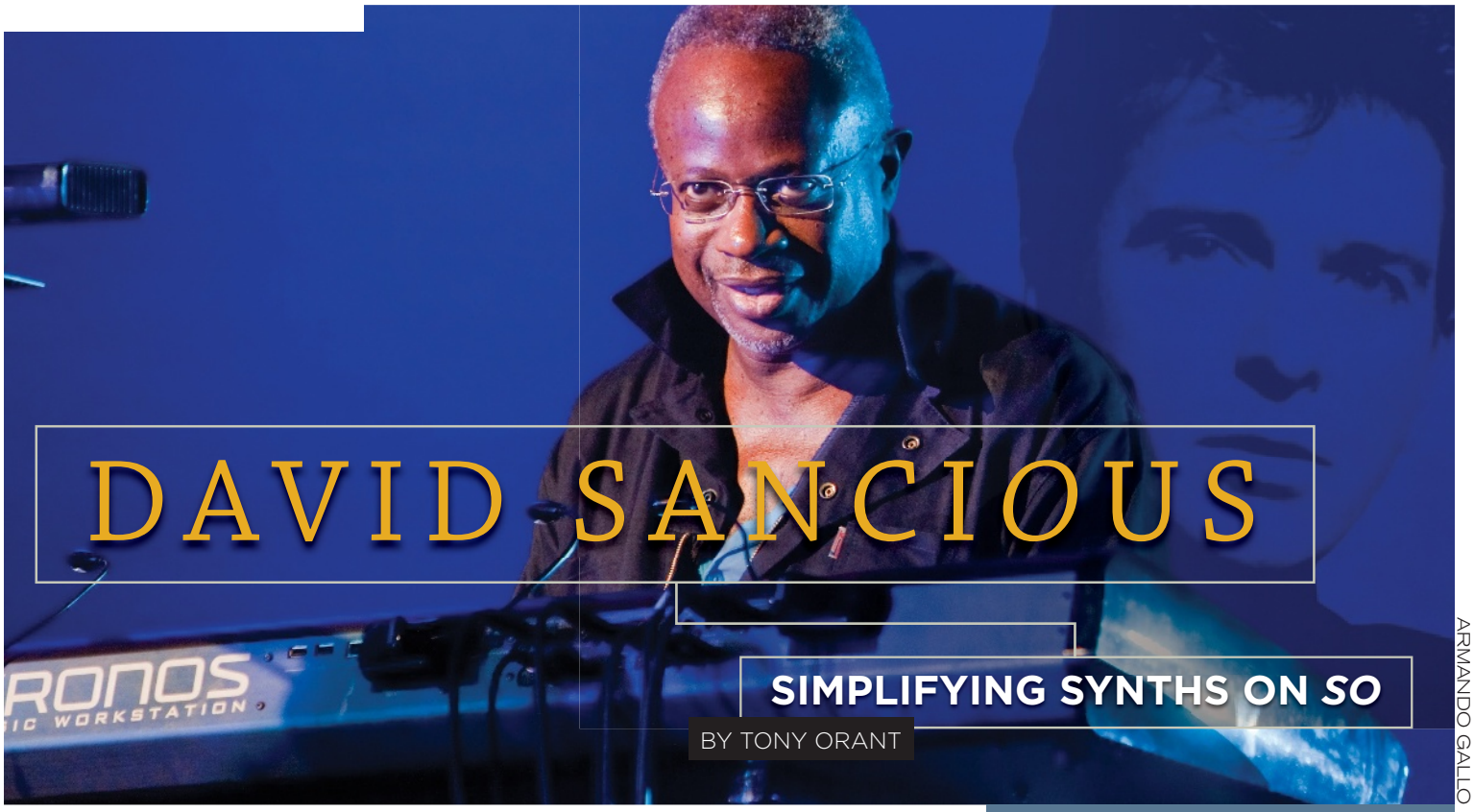
Do modern digital keyboards hold their own next to the vintage axes?

After years of the Wallflowers touring with a real piano, I finally committed to the Yamaha P200 for my 88-key piano. The Yamaha pianos are amazing! Whether it's with the 'Flowers or the Foos, I can get the piano sound I love live. And Markus Resch's new digital Mellotron is blowing my mind live and in the studio. Every keyboardist needs this thing! [*Read our full review of this instrument on page 60. –Ed.*]

The Nord Electro series has saved my ass many times, such as at random appearances at L.A. clubs since they come in small sizes and have huge juicy sounds. I've been messing with the new Kurzweil [PC3K] as well. All these digital 'boards can offer some magic—you just have to navigate and create. I've always been partial to messed-up vintage keyboards because they offer so much character that it's almost like cheating. Digital 'boards have all the fun in there; you just need some patience cause they're so clean comparatively.

How do you challenge yourself as a keyboardist?

Lately, I've been challenging myself to just *let go*. I know from 25 years of experience that whenever I just dove head first into songs like a kid in a candy store, people have responded so well. That *sounds* easy and fun, but I know other players can relate to this fact: We build up so much s*** in our heads because when were growing up we worshipped our keyboard idols, so when we finally make it into the studio and the red light comes on, we can get uptight and nerdy. So I try to keep a good attitude about barfing out parts and being anti-precious. Especially in a band where the players are so damned good! Musicians like this run the risk of hiding their true character, so I kept nagging to just leave it at this or that. ♫



ARMANDO GALLO

DAVID SANCIOUS

SIMPLIFYING SYNTHS ON *SO*

BY TONY ORANT

LAST YEAR MARKED THE 25TH ANNIVERSARY OF PETER GABRIEL'S LANDMARK album *So*, and to commemorate that artistic and commercial milestone, Gabriel has remastered the songs and released a massive boxed set containing multiple DVDs, CDs, and a documentary. For the supporting tour, Gabriel reassembled the band, including keyboardist David Sancious, who has also worked with Bruce Springsteen, Stanley Clark, Billy Cobham, John McLaughlin, Jon Anderson, Aretha Franklin, and Narada Michael Walden. After working the *So* tours in the late '80s, David became a go-to sideman for Sting and Eric Clapton—where he shared the stage with Seal, Jeff Beck, and the late, great, Billy Preston.

Currently on tour with Sting, David Sancious rejoins Peter Gabriel this fall for a European tour. Keep up with him at davidsancious.com.

How is playing the material different this time around?
Well, we're being very respectful of the *So* songs and arrangements, so in that regard, not a lot has changed. We do change things up on a few songs: For instance, we do an unplugged treatment of "Shock the Monkey" where I play acoustic piano.

Since the original *So* tours, how has the keyboard rig changed?
Wow, a lot! I used to carry two 19-inch racks full of modules, Roland D-550s, Korg M1s, a bunch of the Yamaha rack-mounted DX7-like synths and a keyboard controller to handle all of it.

What was the keyboard controller?
The Yamaha KX88, then later the Peavey DPM-C8. That was the best controller ever. Then I'd have a lot of pedals so I could bring sounds in and out. That's the main reason I sit. I don't understand how keyboard players can stand—well, I do understand, but for the way I play, I need to use my feet as well as my hands. Now, I can do all of that with one keyboard, no racks. I use this Korg Kronos 88. It has all these wonderful sounds, and puts everything right in front of me. I can see everything right there in its window.

Are you using just Kronos sounds, or are you triggering anything else?
There are a few other things being triggered, but not by me. All the sounds I'm playing are coming out of the Kronos. Peter has one as well, inside a shell that resembles an extra-large Yamaha CP70. Some of the sounds come from Peter's custom library. He has an extensive library of sounds that he has personally collected over the years, from some of the percussion instruments and Fairlight sounds to his own Yamaha electric grand pianos. The guys from Korg worked with Peter to convert those sounds into the Kronos.

Is there any piece of gear you wish you still used but don't, new or vintage?
No, I don't miss any of it! [*Laughs*.] I don't miss the tuning problems, the temperature problems, the breakdowns . . . I can get those sounds out of the Kronos. I like having everything in one place. Otherwise, you're dividing your attention: "I'm going to play *this* part with this hand, and then my left hand is going to go over *there*. . . ." You're not actually concentrating on playing.

I'll tell you, the only thing I do miss are the [multiple] foot controllers. I used to use a number of foot pedals so I could bring sounds in and out while I was playing. My old keyboard had a number of inputs for pedals, so I could run different sounds independently. Now, keyboards only have one pedal input. My Kronos can take one sustain pedal and one [continuous] foot pedal, and I really wish I could add at least one more, but that's the only thing I'd change. Today, you really only need one keyboard. ♫

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MARINA CHAVEZ

Pentatonic Primer

BY JEFF LORBER

WELCOME TO "COLD FUSION," A NEW *KEYBOARD* COLUMN WHERE WE'LL BE exploring concepts of jazz-fusion playing from the ground up. Let's begin with pentatonic soloing.

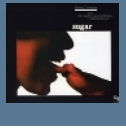
Pentatonic scales are especially relevant when it comes to improvisation in a jazz-fusion context because of the many patterns you can play with them. Like other tools that help you improvise, the pentatonic scale should be used sparingly, but it can be a fun way to navigate through different kinds of chord progressions, and especially when jamming over mostly one-chord modal songs. You can also use them in songs with a lot of chord changes by timing your phrases to end on a target chord. Even though the pattern might be slightly dissonant with regard to the approaching chords, if the notes fit the target chord, your ear will interpret them as fitting the changes.

Listening List

Great Modal Songs For Pentatonic Practice

MILES DAVIS
"All Blues" from
Kind of Blue

WAYNE SHORTER
"Footprints" from
Adam's Apple



STANLEY
TURRENTINE
"Sugar" from *Sugar*

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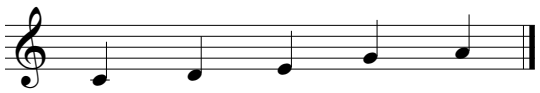
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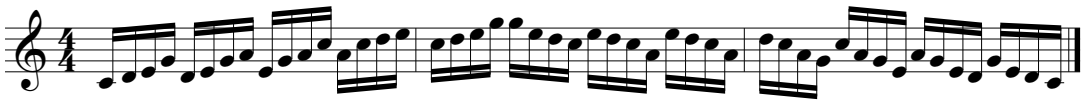
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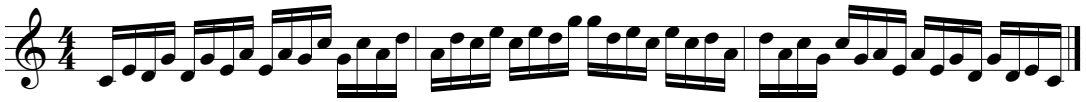
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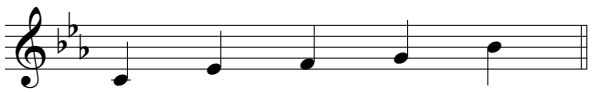
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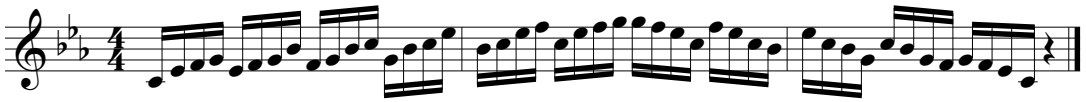
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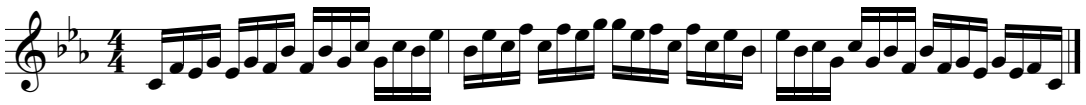
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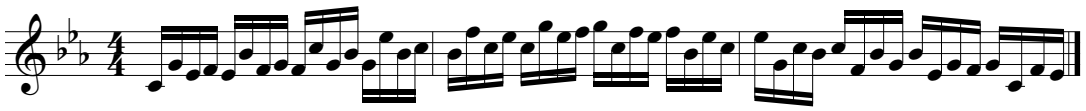
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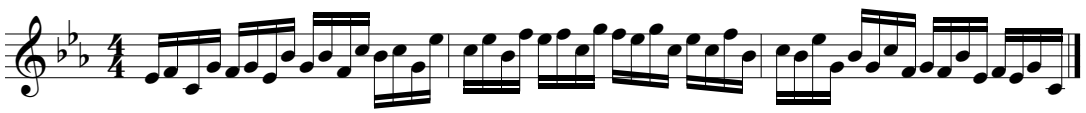

1. Pentatonic Basics

Ex. 1 illustrates the *C* major pentatonic scale. Any major pentatonic scale contains scale degrees *1*, *2*, *3*, *5*, and *6* from the major scale.

2. Pentatonic Practice

Ex. 2 demonstrates one way you can practice a *C* major pentatonic scale by breaking it down into groups of four notes per phrase.

3. Pentatonic Patterns

Ex. 3 illustrates a useful pentatonic pattern created by playing every other note in the pentatonic scale in ascending and descending shapes. Practicing these patterns in all 12 keys will help you develop facility with this technique. The major pentatonic scale sounds great when played starting on the root or fifth of a major seventh chord, or the flat third or flat seventh degree of a minor seventh chord.

4. Minor Pentatonic Scales

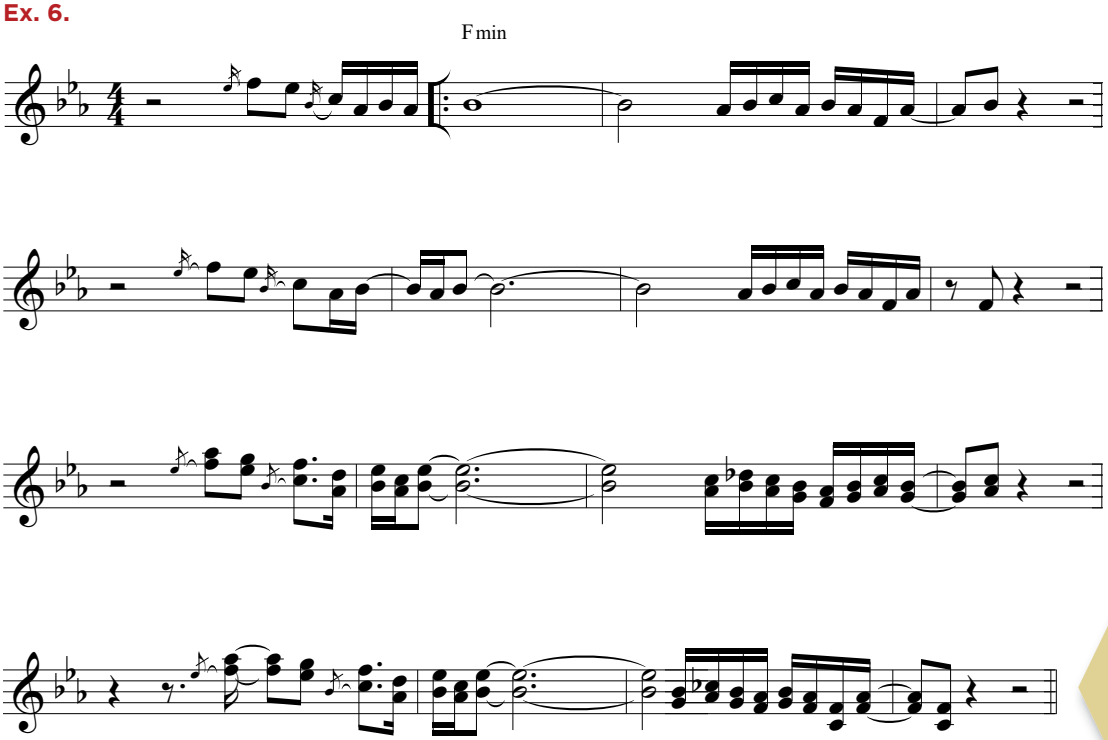
Ex. 4 illustrates the *C* minor pentatonic scale. Note that this scale contains scale degrees *1*, *3*, *4*, *5*, and *7* from the natural minor scale.

5. Pentatonic Phrases

Many pentatonic phrases have become mainstays of jazz improvisation. **Exs. 5a** through **5d** illustrate variations that you can use in your sonic explorations. It's interesting to note that compared to the keyboard, the way the guitar is set up makes it easy to play pentatonic patterns.

Practice Tip

"Even fragments of pentatonic scales can be useful in improvisation. If you check out John Coltrane's solo on 'Giant Steps,' you'll see that he starts this solo by playing a pentatonic scale fragment starting on the root of each chord," says acclaimed jazz-fusion keyboardist **Jeff Lorber**. His latest release is *Galaxy*. Find out more at lorber.com.

Ex. 6.

6. Pentatonics in Action

Since melodies can often be thought of as distilled or crystallized improvisations, **Ex. 6** illustrates the melody of my song "Live Wire," which is the first track on my latest CD, *Galaxy*. Note the use of pentatonic patterns throughout.

SOUNDCLOUD

Hear Jeff play this lesson online, plus a clip of the pentatonic solo from his song "Live Wire."

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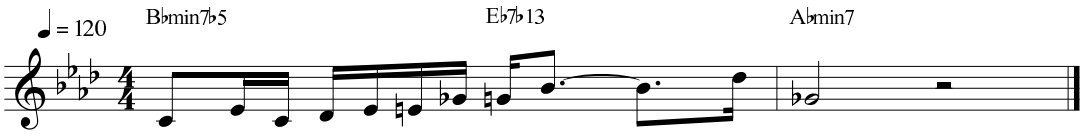
Warming Up On the Run

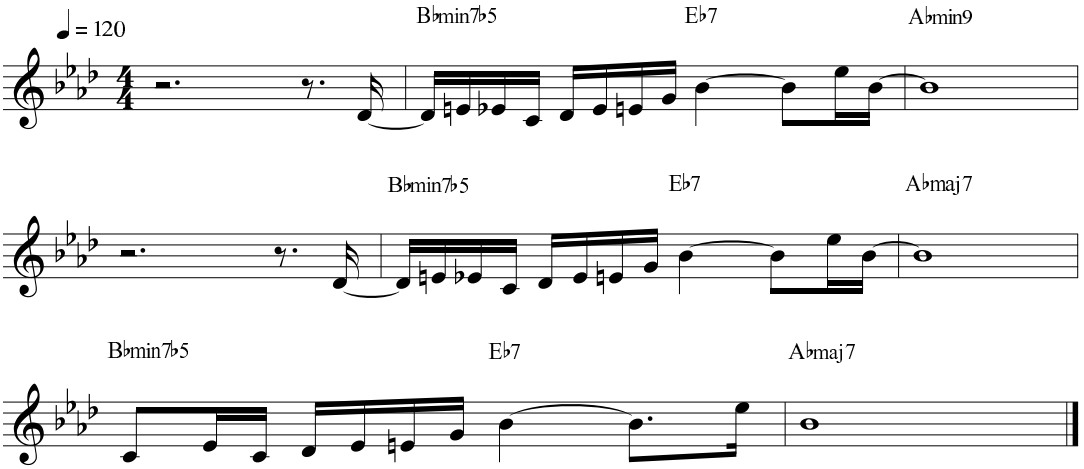
PART 1

BY FEDERICO GONZALEZ PEÑA

FOR A KEYBOARD PLAYER, PRACTICING WHILE ON TOUR CAN BE DIFFICULT. SOMETIMES SOUND CHECK BEFORE A show is the only time we get a chance. In Part 1 of this two-part series, I'll illustrate some *melodic*-based exercises I often create on the spot to help me find my center when time is tight. Next month, we'll explore more *rhythm*-based means to the same end. Remember—these examples are just guidelines. It's not so much what you play as it is the mindset you bring to your playing that makes all the difference.

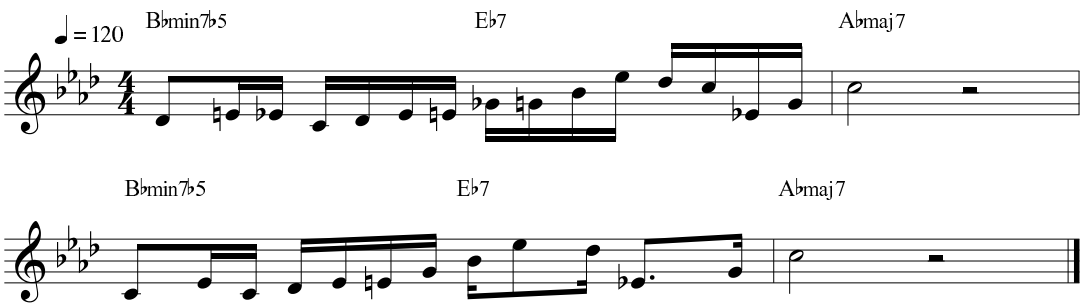
Ex. 1.

1. Progression-Based Lines

Ex. 1 illustrates how I often begin my warm-up routine. Here I've created a simple melodic line delineating a minor *II-V-I* progression. The target chord I'm shooting for is the *A♭min7*. Try warming up by building your own simple lines on various chord progressions.

Ex. 2.

2. Melodic and Harmonic Variations

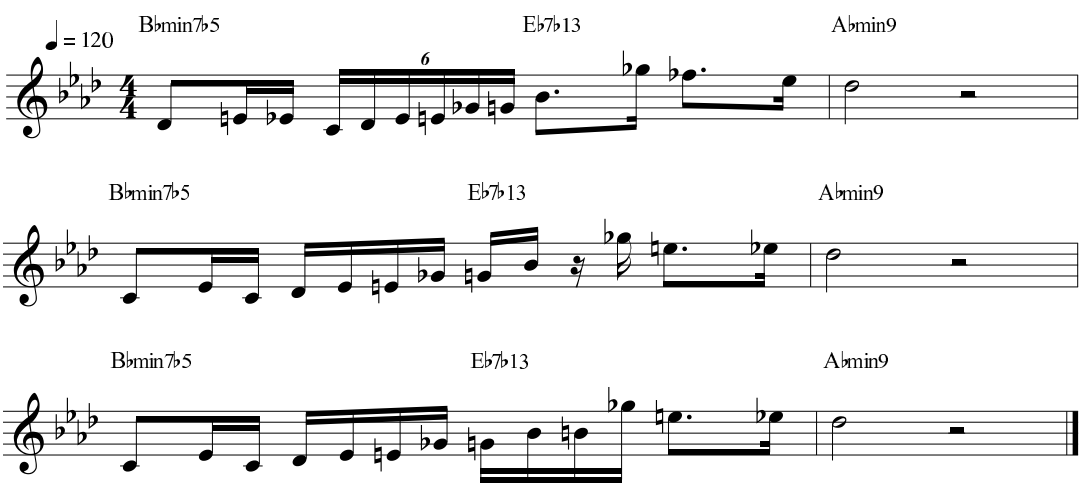
In **Ex. 2** I start tinkering with the line and anticipating the beginning note. I've also changed the first note from *C* natural to *D♭* and I've added a little "wrinkle" to the end of the phrase. Notice how I change the target chord from *A♭* minor to *A♭* major. In bar 7, I alter the phrase and return to *C* natural on the downbeat.

Ex. 3.

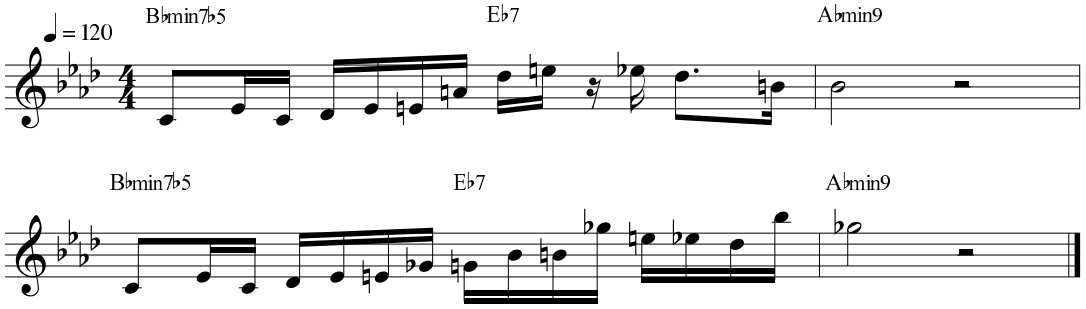


3. Adding Notes and Syncopation

In **Ex.3** I continue toying with my melodic line, adding notes to jumpstart my mind and keep it malleable. Notice how in bar 3 I'm implying an *A* triad starting on *E* natural—I like that sonority against the *E♭7* chord. Also, because there are less notes in the line at this point, it accentuates the syncopation and adds a new degree of rhythmic interest.

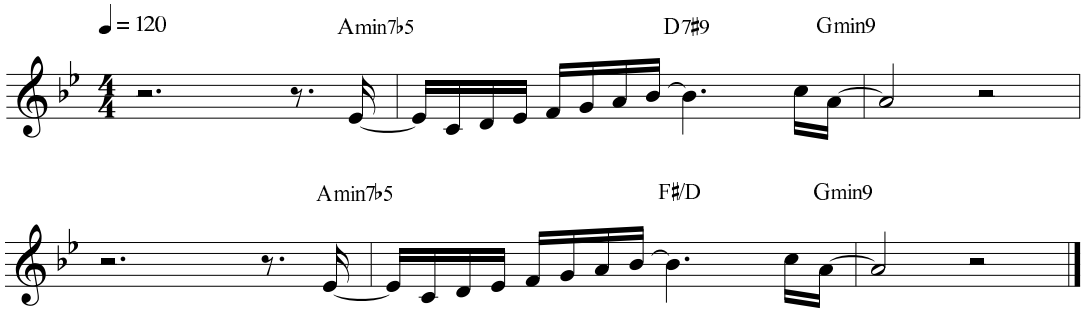
Ex. 4.

4. Phrasing and Fingering Practice

Ex. 4 shows how I continue to add notes to the line to continue my workout. As you add notes to a phrase, you'll find it necessary to speed sections up in order to make some of the phrases fit. Play around with fingerings to find the most effective way to execute your warm-up lines, and you'll keep your hands nimble and your mind entertained!

Ex. 5.

5. Changing Directions and Rhythms

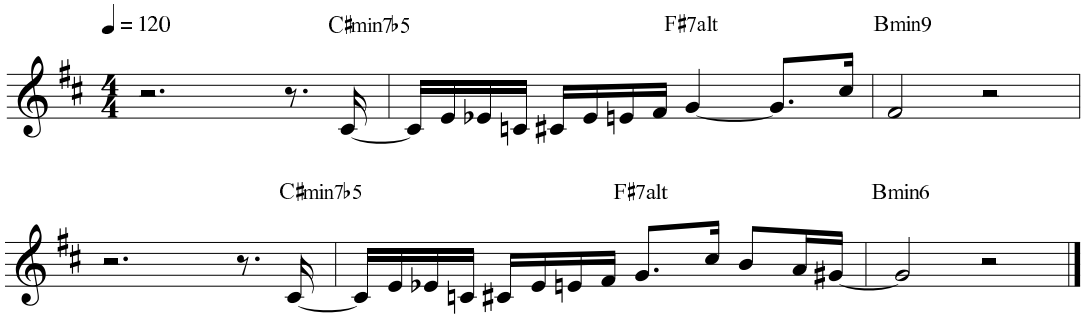
Ex. 5 illustrates how I'm continuing to warm up by adding notes, changing directions, and playing with rhythms. Sometimes even the slightest alteration can affect and inspire your phrasing. Things start to get interesting in bar 3. . . .

Ex. 6.



6. Key Changes

In **Ex.6** we're changing keys. Now the target chord is *Gmin7*. Notice how the line is now very similar to our first one. You will find that one line can fit more that one set of chord changes or tonal centers, often with very little adjustment. In bar 5, I've substituted the *D7* chord with a more "out" sound, an *F♯* triad over *D*. You'll have to adjust your fingering and most likely play the *A* with the third finger in order to land the *F♯* in your right hand.

Ex. 7.

7. Altered Cords

In **Ex.7** we change keys again, making the *Bmin7* chord our new target. This time I adjusted the left hand to accommodate the *G* natural in the right hand by playing an altered *F♯* chord. That led me to the *Bmin6* chord variation quite naturally.

Practice Tip

"Even if you focus on one simple idea, adding a few notes here and there and altering the starting point of phrases can have a profound effect on your mental agility," says keyboardist, composer, and producer **Federico Gonzalez Peña**. Peña has worked with Me'Shell N'DegeOcello, Maxwell, Chaka Khan, Marcus Miller, and many other artists. He currently co-leads a band called Gaia with Gene Lake and Gregoire Maret—in which his left hand is the bass player.

Federico Gonzalez Peña with Gregoire Maret.

Federico plays expanded audio examples from this lesson.

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Multitasking Onstage

BY MATT BECK

IF YOU'RE A GIGGING KEYBOARDIST, YOU'VE UNDOUBTEDLY BEEN ASKED TO cover multiple parts at once. Often times, this involves playing parts with one hand so that your other hand is free to play other keyboards or zones on the same keyboard. This can be a challenge, as you need to make all the parts sound full while at the same time keeping them lean. Here are my favorite ways to multitask on stage.

1. Thumb Fun

Sometimes you have to comp chords with one hand because your other hand is needed on another synth or keyboard. The challenge here is to make chords sound beefy enough with just one hand. **Ex. 1** illustrates a great way to accomplish this, taking a cue from what many Gospel piano players do when comping: They grab an extra note with their thumb so that two notes can be played at the same time with it. Try this on a variety of different chord qualities, and you'll be amazed how much sound one thumb can provide.

2. Leave Out the Third

Especially on organ, fewer notes can often sound fuller in a band context. This can be a lifesaver when you need a free hand or finger to play another note or sound elsewhere. **Ex. 2** demonstrates a simple chord progression where I leave out the third of different chords but I am still able to convey musical heft and power.

3. Go Southpaw

Problem: You have a two-handed comping part and then you're asked to cover a string line at the same time. Solution: Approximate the *motion* of said two-handed comping part with just one hand so that you can grab the string part with your other hand. **Ex. 3** illustrates how this can work.

4. Contrary and Oblique Motion

A clever way to give the illusion that there is more happening than what you are actually playing is to use the techniques of contrary and oblique motion, seen in **Ex. 4**. *Contrary* motion is when two notes in a phrase go in opposite directions. Oblique motion is when one note stays the same and the other is moving. These techniques make the listener feel like there are many parts happening at once.

Make Technology Your Friend

Sometimes the best way to multitask is to exploit capabilities of your synth that you may be underusing. On pretty much every modern workstation, you can split sounds across your keyboard, layer programs so that different velocities actually trigger different instrument sounds, trigger phrase samples from a single key or drum pad, and in some cases, even trigger such samples using a foot switch. These techniques free up your hands to do even more at once.

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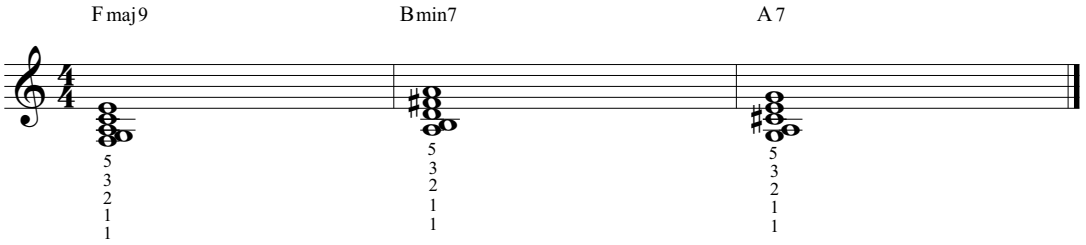

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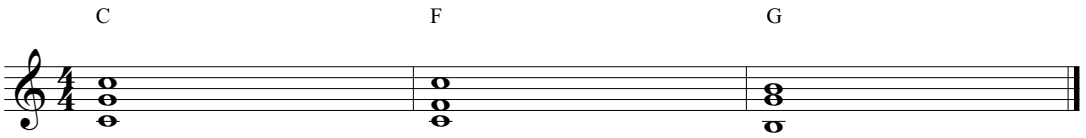

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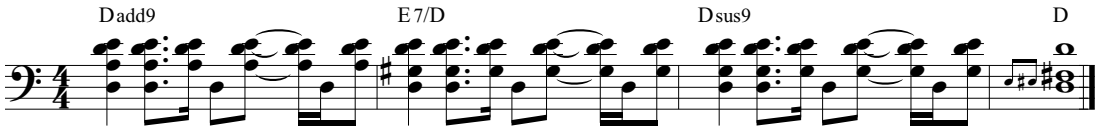
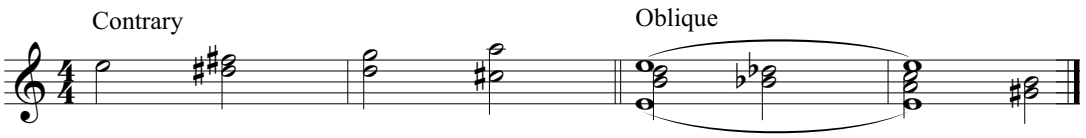

Ex. 4.

Matt Beck plays keyboards and guitar with Rob Thomas, Matchbox Twenty, and Rod Stewart. He also plays guitar on the Broadway musical *Spider Man* and has a solo album titled *Anything Which Gives You Pleasure*. Find out more at myspace.com/mattbecktwenty.

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Fig. 1. Spitfire *Sable* is a brand new string library focusing on small sections that is great for focused, expressive writing and for layering over larger sections: four violins I; and three violins II, violas, cellos, and contrabasses each.

Fig. 2. Notice the two pitch randomization knobs in the lower right of Audiobro *L.A. Scoring Strings Legato Sordino 2*, which interjects small user-definable deviations in pitch from note to note.

Advanced Techniques

BY ROB SHROCK

SINCE THE OCTOBER 2012 ISSUE, WE'VE BEEN DISCUSSING EACH SECTION of the modern sampled orchestra in detail. For this final installment of the Virtual Orchestra series, let's look at a few advanced techniques that can help our scores sound even better. Now that we've loaded up our DAW with a great collection of samples and articulations, nothing gets my heart racing more than a big empty arrange window and a deadline.

Make a Piano Guide Track

When I'm sequencing a standalone orchestral piece that's not serving as accompaniment to an existing rhythm track (as for a pop song), often I lay down a piano guide first. Although it takes some additional effort on the front end, this has ultimately proven to save me time and serve as a candle in the dark. Depending on the composition and style, it may be just the basic chord structure of the piece performed in a single pass or I may quickly overdub multiple passes on top of one another using duplicate piano patches. If I am hearing (or have written) certain lines or harmonies, I'll stack and build them into a fairly detailed guide track. I'll roughly edit the velocities, note-ons, and tempo map as necessary to reflect the compositional intention, slightly exaggerating the overall dynamics of the piece. The point is not to create an actual piano performance; rather to create an accurate guide with a neutral timbre that serves as a master reference for the overall timing, dynamics, and form of

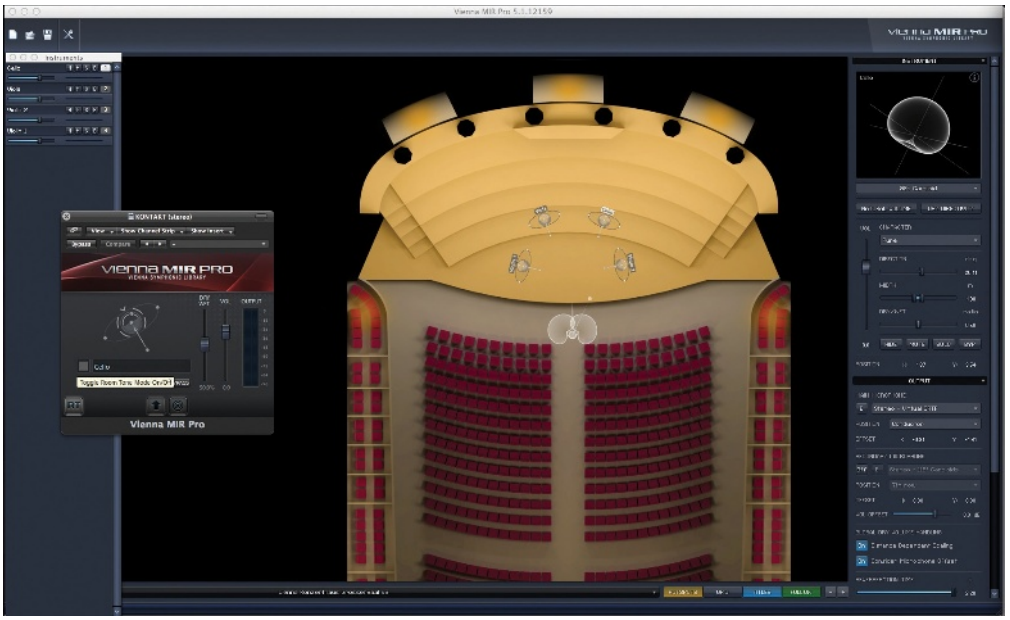

Fig. 3. Vienna MIR Pro allows you to place instruments anywhere on a virtual soundstage. Venue, instrument position and rotation, and mic choice and placement are just a few of the many parameters.

the score. (Sometimes I use a soft electric piano sound.) I will then sequence the actual parts while listening to the piano guide. It's not uncommon that I edit the guide track in more detail as I go.

It can be very difficult to start a musical passage from silence when there's no surrounding context, as "somebody" has to go first. For example, it can be challenging to exactly tell the appropriate volume and dynamic contour of a cello line without hearing the violins or the rest of the orchestra. A guide piano that reflects the appropriate feel makes it much easier to find the musical context for the first few orchestral parts I lay down.

Sometimes I will actually mute existing tracks in a section I've already sequenced as I work on a new part, still playing to just the guide piano as a consistent reference that helps me find the proper velocity and/or volume for that particular instrument. This can help keep the timing in check, too; as well as letting me better hear the nuances of the part I'm working on. This takes some getting used to, as the transient attack of a piano can feel inappropriate for some musical passages; however, it's a technique worth adding to your toolbox as a way to break the silence and get the ball rolling.

The Human Factor

Virtual orchestras generally benefit from some humanization. (It's slightly ironic that the loftiest goal of a world-class 60-piece orchestra would be to play exactly together and be perfectly in tune with one another.) So, the deviations that occur naturally must be created by the composer and/or be built in to the sample library. Orchestral music doesn't sound completely authentic without the imperfections.

One of the benefits of stacking individual horn players or separate layers of smaller string sections (see **Figure 1**) is that your performance will never identically match your previous one. Sometimes simply switching hands when playing a layered part will create interesting differences. Resist the urge to overly edit your sequences early on; allow those small inconsistencies in timing and volume to remain, at least for a while.

Any time a library offers round-robin samples, it's usually preferable to use them, even though they may hit your computer a bit harder. It's worth the resource usage. If there are any other randomization features in your DAW or library, experiment to hear how they might loosen up the performance. Other than round-robin samples, I generally stick with some subtle pitch randomization rather than modifying velocity or volume (see **Figure 2**).

Several libraries provide elaborate scripting for creating patterns and ostinatos using a combination of round-robins, sample-swapping, and tiny timing and pitch randomizations. These can be immensely useful for film, gaming, and commercial underscoring.

Processing

We've touched on this subject before: It's going to take one or two good reverbs to pull all the disparate libraries together into a unified whole. For that reason, as much as I love the various room mic perspectives in the higher-end libraries, I tend to go easy on using them. I usually lean towards the shorter reverb tails—just enough to give some richness and depth to the samples and no more; as I know I'm going to have to add more reverb later when combining with other libraries.

I primarily use a room sound in a convolution plug-in, like AudioEase AltiVerb or Quantum Leap Spaces, to unify the various orchestral sample libraries into a single space. There are a number of great impulse responses available of various studios, rooms, and concert halls. This is usually followed either by a Lexicon hall to add some height or a plate reverb to add some backsplash, all depending on the nature of the composition.

In addition to traditional reverbs, sophisticated room simulations like Vienna MIR Pro are seeing more use by composers (see **Figure 3**). These let you place each track on a virtual soundstage. Every room choice, instrument position and rotation, and mic choice and placement alters the sound, much like in a real acoustic environment.

Have you ever listened to a great soundtrack as a reference, and then listened to your orchestra mix, and wondered why yours sounded two-dimensional? As difficult as it is to get everything panned into its proper place, it's still very easy to end up with a final mix where instruments sound either too hard-panned and weirdly disconnected, or jammed together with a muddy middle that sounds like a glorified keyboard ROMpler patch. One last little secret of the pros is image manipulation. When boxiness is the problem, try applying a judicious amount of a stereo widener, such as Waves S1. Even better, a plugin with M/S control can help either fill in the hole or clear out the mud in the middle for a more spacious, three-dimensional sound.

Finale

There's no getting around the fact that creating a realistic virtual orchestra is time-consuming and hard work, and even implementing helpful tips and tricks can add more to your workload. Like everything else, the more you do it the better you get. The hope is that you eventually develop a sophisticated, effective workflow that makes someone say, "Where did you get the budget to record that amazing orchestra?" ♫

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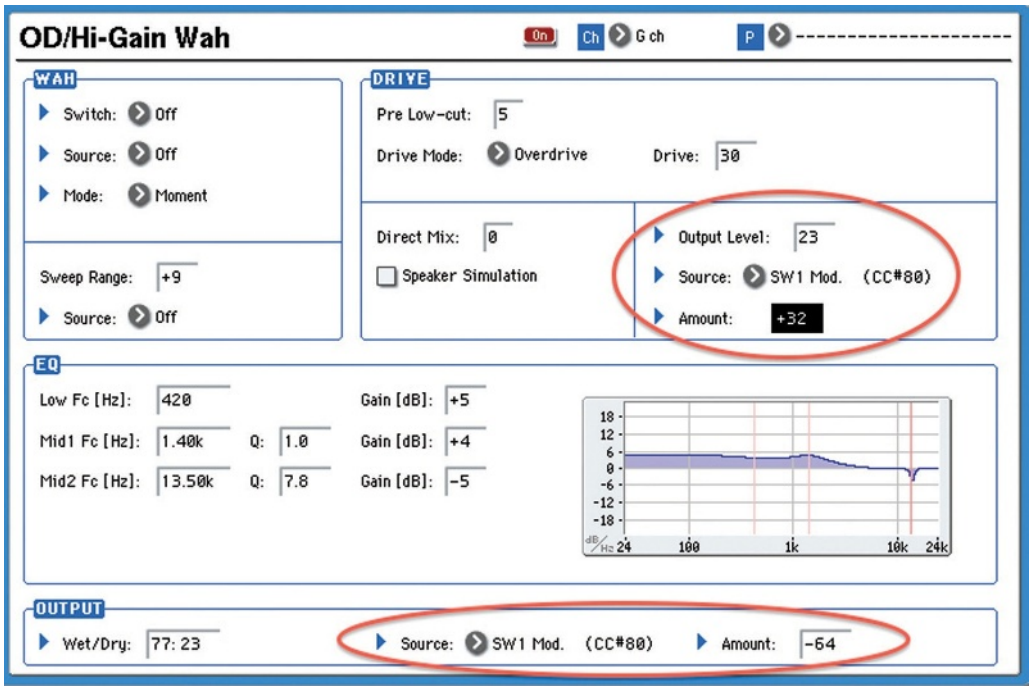

Fig. 1. An Overdrive effect in the Korg Kronos, with assignable switch 1 assigned to reduce the wet/dry ratio and increase the output level for playing intervals and chords semi-cleanly.

THE ART OF SYNTH SOLOING

Some Dirty Little Secrets

BY JERRY KOVARSKY

LAST MONTH, WE LOOKED AT BOTH SYNTHESIS-BASED AND EFFECTS-BASED ways to add the keyboardist's equivalent of a bit of guitar feedback to our synth solos. This month, let's continue exploring and taking control of overdriven and distorted lead synth sounds.

One or More?

One of the main issues you'll face when deciding how much input gain or drive to dial in is whether you want to play a monophonic lead or chords. The moment you add a second note to your playing, you'll find that your sound goes from good to pretty well fuzzed out. Or when you dial in the best dirty chordal sound but then you go back to single notes, your sound weakens and loses the nice edge you gave it. So why not give yourself control over this?

Before we set this up, let's talk about polyphonic playing of distorted sounds, shall we? The deeper you dial up the overdrive, the more open you'll want to voice your chords. Sure, a little bit of dirt sounds good with any playing, as electric piano, Clav, and organ players have been proving for decades. But the deeper you delve into distortion, you'll find that close intervals get too thick and muddy, and you'll need to adapt. There's a reason most classic metal tunes don't really define a major or minor third in their chords and riffs—open intervals just "speak" better. So explore two-note parts like the root with a fourth below, open fifths,

SOUNDCLOUD Original audio examples.

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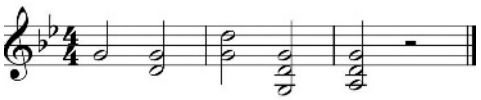

Fourths, fifths, and mixed octaves work best with distorted sounds.

octaves, octaves with the fifth in between, and stacked fourths. The staff above shows some of these voicings to get you started.

Take Control

So let's assume that you have your great lead sound all dialed in from last month, and you've been playing it in mono mode, and you're happy. Try changing the sound to polyphonic mode and try again with some chords. Pretty fuzzed out, right? What we want to do is set up a switch or button to modulate the amount of gain or wet/dry mix of the effect, in order to tame it when we play more notes. Choose an unassigned switch on your synth/controller and be sure it's sending out a currently unused MIDI CC. Now we can assign that CC to lower the amount of overdrive. This is a little tricky because, as we learned last month, there's that relationship between the input gain amount and the output volume that's been set up, so when we introduce the effect our volume didn't jump up significantly. So our switch needs to be assigned to two destinations—negatively to the amount of drive/input gain/wet signal in the mix (to reduce the distortion) *and* positively to the output gain to make up for any signal loss. **Figure 1** shows this setup for an insert effect on the Korg Kronos. You'll need to dial in the modulation values by ear, but in general you'll modulate the input gain or wet/dry mix parameter more than the output. In most algorithms I've seen, there's no onscreen modulation access for the input gain, but DAW automation or MIDI Learn will work.

Figure 2 shows a fancier setup I created in Apple's MainStage software. My overdrive comes from Korg's MDE-X suite of effects. I've assigned a switch from my controller to two destinations, the wet/dry mix of the effect and its drive parameter (called Param 5 by the automation labels). When the switch is on, it kicks up both the wet-to-dry ratio and adds some *more* drive, which works great for my single-line playing. When I want to play intervals or chords, I turn off the switch and it takes down the drive significantly, and lowers the wet-to-dry ratio a bit as well.

Finally, the amount you choose to bring down the distortion is directly related to how many notes you want to play. Two-note voicings only need a little gain adjustment, while three notes (especially stacked fourths as compared to root-fifth-octave) will require more.

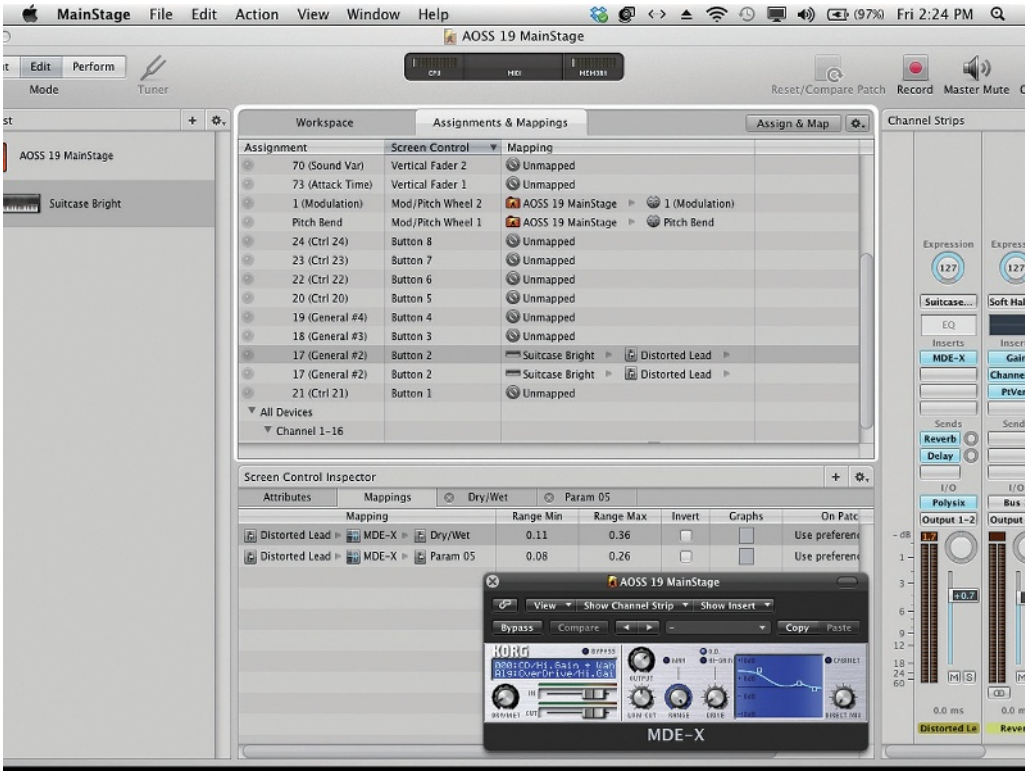


Fig. 2. A dual destination mapping in Apple MainStage to reduce the wet/dry mix and drive amounts for polyphonic distorted playing.

One Is Never Enough

Each resource and effect we've talked about has its own character, and often the best sound will come from combining a few of them. Start with some filter drive or waveshaping, and then add an overdrive effect. Once you've gotten a basic tone from the overdrive, go back to the drive or waveshaping and retweak it, listening to how it "feeds" the overdrive. Perhaps there's an overdrive or distortion that you liked when you were auditioning them, but it robbed too many frequencies as an insert so you set it up on a bus. There's no reason you can't go back to your insert and add another effect, dialing in just a little bit to add more edge. Or you could cascade two or more effects on your bus so you don't dial any one effect up too high, but you blend their differing characteristics to get your sound. I've found a lot of effects that work well for a small part of their range, and then . . . all heck breaks loose. So exploring combined effect strips can be the perfect solution.

These combinations don't have to include only overdrive/distortion effects. Often it's good to put an EQ of some sort in the chain. Parametric EQ in front of the overdrive can help you "feed" the effect to draw out different characteristics of its sound. Set up a somewhat narrow band, increase its gain, and sweep the center frequency around to listen to how the EQ changes the overall tonality of the overdrive. When you find a frequency area that pleases you, reduce the gain somewhat and experiment with the width (Q) of the band. If you only have a graphic EQ available, select a band (midrange is best to start experimenting with) and try raising or lowering bands until you get the results you like.

Putting the EQ after the overdrive/distortion effect(s) can help restore some frequencies that were lost, but more importantly, it can tame some frequency boosts that get introduced by the effect. I often hear a midrange frequency that gets a bit "peaky" from an overdrive, so the same parametric "sweep and seek" approach can help you find the frequency and then cut it's level to taste. This type of frequency removal is best done with a very narrow bandwidth or Q so you don't step on the sound too much. Another common scenario is when the effect brightens the sound a bit too much, so it starts sounding brittle. Rolling of some highs after the effect is the logical answer.

If these EQ issues are only important when the overdrive is being used, you'll want to map the same controller you're using to turn on/off the overdrive to also turn off—or control the wet/dry mix of—the EQ. Hopefully your keyboard can assign enough destinations to the same controller. MainStage allows up to eight assignments per controller so it's easy to create complex yet musical setups. If your synth or setup doesn't allow this, not to worry. Just make two versions of the sound: one with the distortion/EQ and another without it.

Everything Old Is New Again, Again

’90S HOUSE CHORD TECHNIQUES

BY FRANCIS PRÈVE

I’VE SAID THIS BEFORE AND I’LL SAY IT AGAIN. ELECTRONIC DANCE MUSIC IS LIKE FASHION THAT YOU CAN HEAR. It goes through predictable and well-defined stylistic cycles in which a sound begins in some underground scene, rises to general popularity among EDM fans, then crosses over onto pop albums you can get at Starbuck’s, at which point it’s cast aside as dated. Then, this now unfashionable genre lies dormant for about 15 to 20 years, after which it is rediscovered by the next generation.

Well, now that the ’80s revival is reaching its end, what next? Why, ’90s house music, of course. Thanks to artists like Disclosure and indie labels like Toolroom and Definitive, the early ’90s house sound is roaring back to life like one of the dancing zombies from the “Thriller” video. [*That video is from the ’80s, but we can’t think of any ’90s videos that have dancing zombies. Unless you count Seattle grunge. —Ed.*]

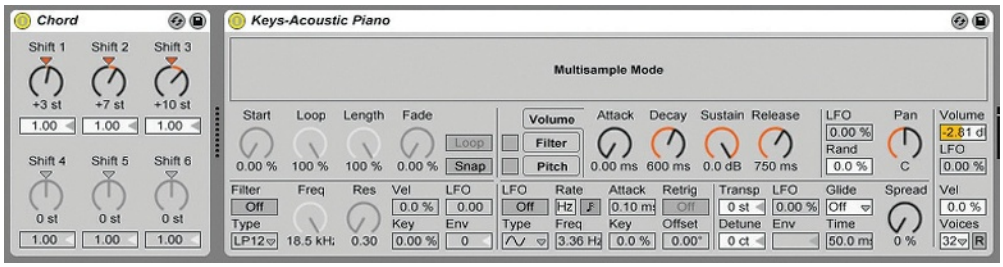
One of the key components of that era of dance production is parallel seventh chords, major or minor, played on either piano or organ. There are two easy ways to accomplish this: Either via sampling or with the assistance of MIDI tools like Ableton Live’s Chord device or Xfer Records’ Cthulhu plug-in (reviewed May ’13).

Method 1: Via Sampling

The classic approach to authentically recreating these chords is remarkably straightforward. Pick your favorite bright piano or B-3 organ preset, play a seventh chord (throw in the ninth if you’re feeling ambitious), then record it as audio into your DAW of choice. Ableton Live’s Freeze/Flatten functions make this task even, ahem, simpler. For added flexibility, make sure you record a sample that’s at least two measures long, because transposing the sample upward will shorten its duration.

From there, crop any silence from the beginning of your chord sample then load it into your sampler of choice, spreading the sample’s key range across your entire keyboard. And if you really want purism, get a used Akai S1000 (shown) to keep it real.

Method 2: Via MIDI processing



Ableton Live includes a nifty MIDI device, simply called Chord, that allows you to pick up to six simultaneous intervals, then play them as a chord using a single keystroke. This technique is especially well suited to playing piano samples, as extreme transpositions of sampled pianos can sound awkward and artificial.

The Chord device settings for a major seventh chord are: +4, +7, and +11 semitones (the root note is automagically included in the resulting chord). For a minor seventh, use +3, +7, and +10. Once you’ve got it set up, just start banging on your keyboard with a single finger. Trust me, something cool and vintage sounding will pop out of your speakers in no time. ♫

SOUNDCLOUD

Step-by-step audio examples.

keyboardmag.com/july2013

Guitar Center

Record Anywhere, Anytime

iOS RECORDING

From your couch to the studio to the stage, tablet technology makes high-quality music production incredibly portable and immensely powerful. Whether you're sketching out a new tune, crafting a beat, scoring a music cue or working on a tricky mix, our selection of flexible iOS-ready hardware and accessories helps you make music wherever you happen to be. From studio-quality mics that plug directly into your tablet to versatile audio and MIDI interfaces, you can take full advantage of the very best audio software iOS has to offer. Plus, a variety of stands, clips, and other accessories mean you can set up your tablet to work comfortably anywhere, so you're always ready to capture the moment when inspiration strikes, or when you just need to check that score or lyric sheet. Wherever you are, however you make music, iOS makes it easier—and Guitar Center is here to help you make the most of it.

BLUE BLUEBIRD LARGE DIAPHRAGM RECORDING MIC

Designed for versatility, the Blue Bluebird large-diaphragm condenser is a perfect complement to your iOS recording setup. Equally at home recording vocals or instruments from delicate acoustic sound to loud guitar amps, Bluebird's fully discrete Class-A circuit and custom transformers make it an indispensable sonic tool.
(22200)

APOGEE DUET 2 iOS-READY INTERFACE

Apogee's Duet audio/MIDI interface, with single-knob simplicity and their renowned converters, rapidly became a standard for mobile laptop recording. The latest generation of Duet adds iOS compatibility for even more record-anywhere versatility, with a feature set that stands apart from other iOS audio interfaces.
LIMITED AVAILABILITY
(DUET IOS MAC)

APOGEE MiC

Once again, Apogee's dedication to impeccable audio quality shines through with MiC, a compact condenser mic with a direct connection to your iOS device. Once you hear the results, it will become an integral part of your mobile recording toolkit.
(MIC)

APOGEE JAM AUDIO INTERFACE

One of the best-sounding ways to get guitar or bass into your iOS device, Jam uses Apogee's PureDIGITAL connection and renowned converters for the pristine sound quality you've come to expect. Best of all, it's completely plug-and-play with any CoreAudio compatible application.
(JAM)

IK iKLIP STUDIO iPAD STAND

With the wide variety of available music software, both for creation and performance, an iPad has become an essential part of every musician's toolkit. IK's iKlip gives you a safe, secure way to mount your iPad to a mic stand, so it's there when and where you need it.
(IPIKLIPSTUDIOIN)

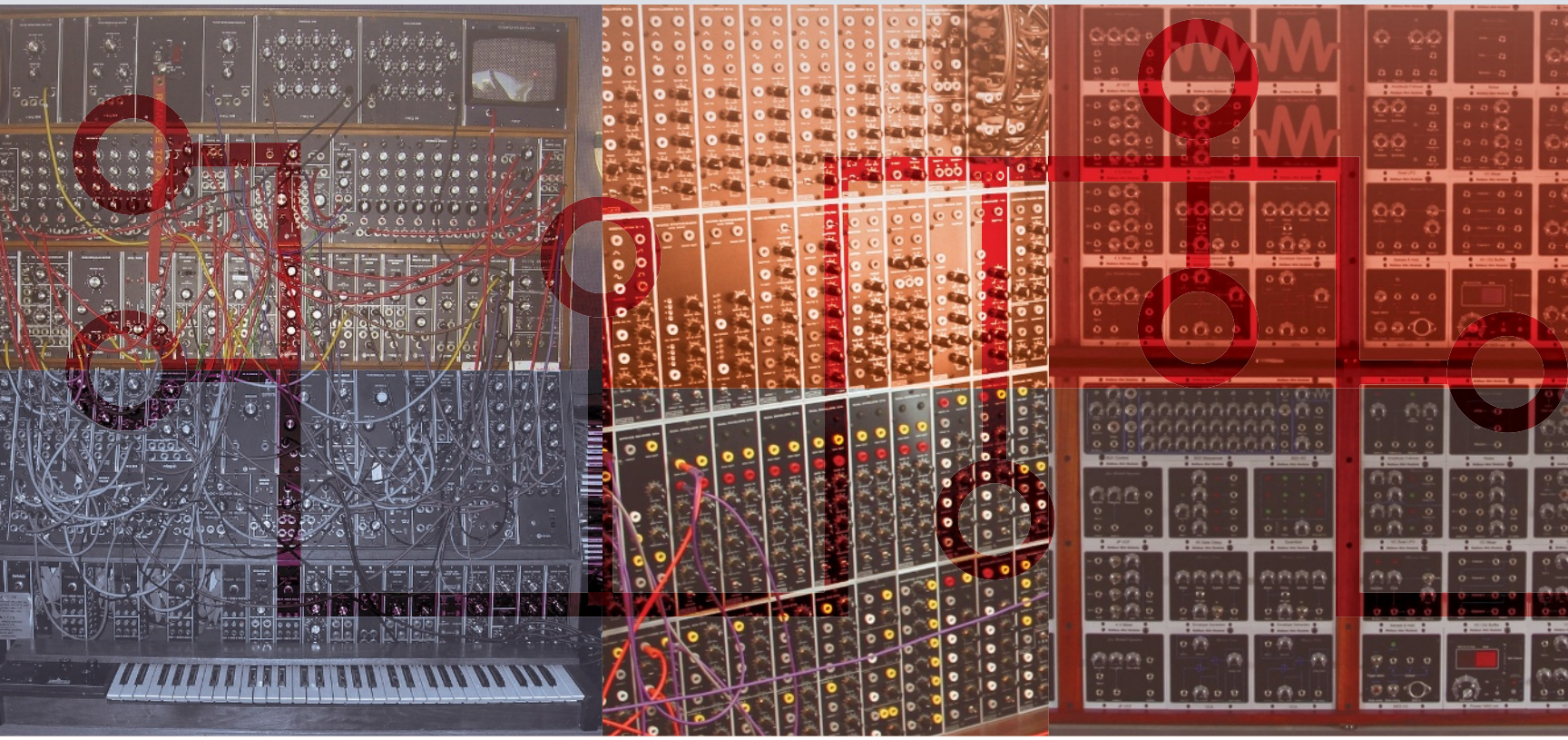
APPLE LIGHTNING TO 30-PIN ADAPTER

Apple's new Lightning connector is small, fast, and power efficient, but may leave many of your older iPad and iPhone accessories disconnected. This Lightning to 30-pin adapter gives your accessories a new lease on life, enabling you to use them with the latest generation of iOS devices.
(MD823ZM/A)

SENNHEISER HD280 PRO HEADPHONES

The Sennheiser HD280 Professional is designed to exceed the demands of the professional environment, with robust construction and extensive features that meet the requirements of today's most demanding applications.
(HD280)

For more info on iOS-based recording, go to: guitarcenter.com/IOS or scan the QR code



Go Ahead, Make Your

A KEYBOARDIST'S GUIDE

BY GINO ROBAIR

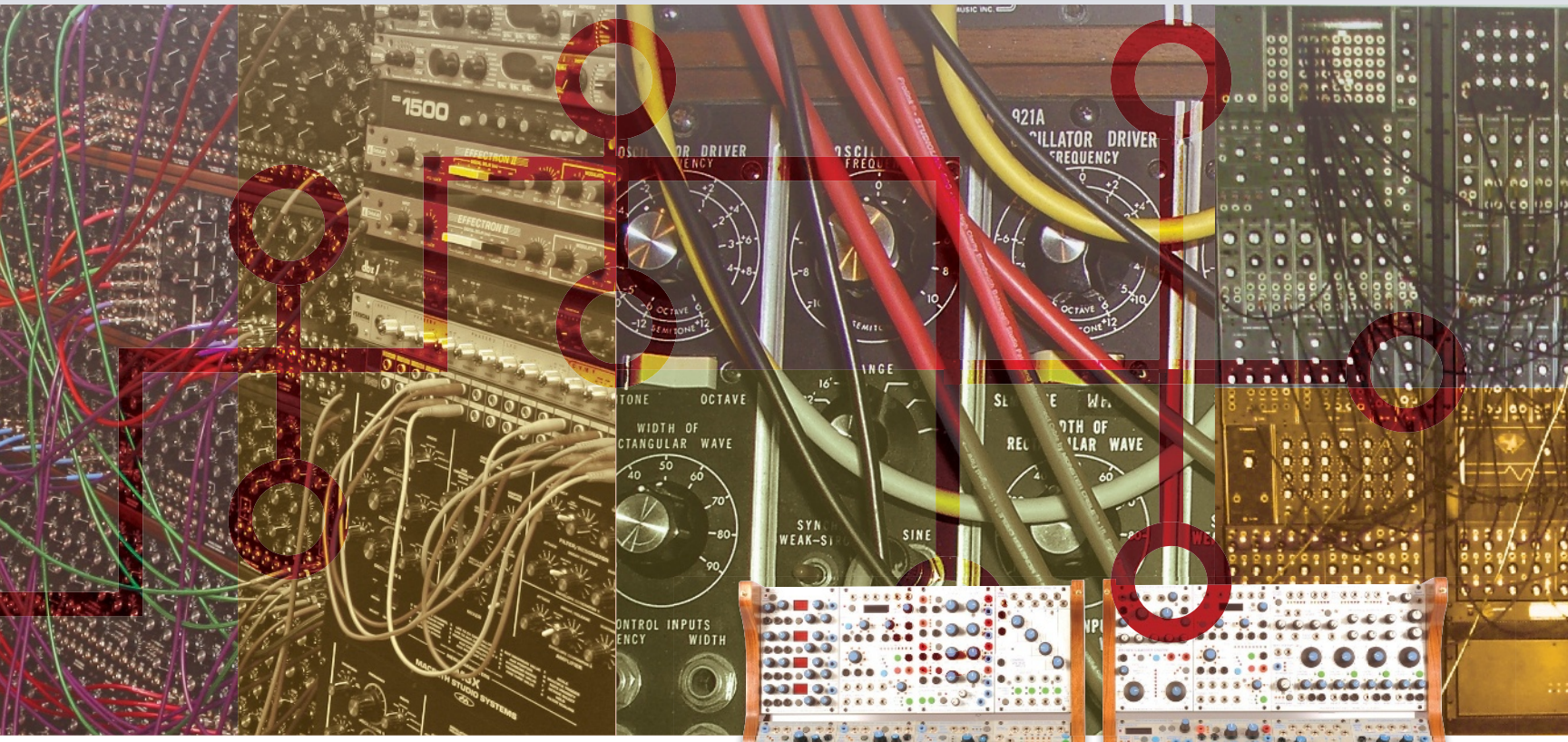
NOT UNLIKE VINYL RECORDS, MODULAR SYNTHS HAVE WORKED THEIR WAY back into the mainstream with a vengeance. Once the domain of university music departments, cerebral and deep-pocketed electronic composers, and progressive rock icon Keith Emerson, hardware modulars are now used by all sorts of musicians from working keyboardists to EDM creators such as Deadmau5. If you're modular-curious and considering starting your own system, our mission in this article is to tell you what you need to know before spending a dime.

Square One

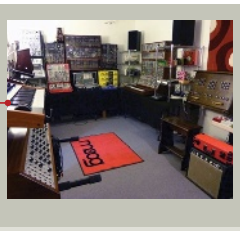
While modular synths have had a reputation as being for niche enthusiasts, mainstream manufacturers like Akai, Arturia, Korg, MOTU, and Propellerhead all have products that support analog control voltage in one way or another. Remarkably, the modules themselves are more affordable than ever, and the number available has grown exponentially in the last decade. Because you can spec out every element of your synth, a hardware modular offers maximum flexibility. Best of all, you can assemble a system that fits your budget and needs, whether the synth must be portable enough for touring or fully integrated into your DAW. Many modular owners started small, researched new modules worth lusting after, and added one or two every other paycheck, building up gradually to large, impressive systems.

The web of a modular's patch cords looks both exciting and daunting to the newcomer. But if you've ever run a keyboard through a chain of effects pedals, you've already got the idea: A modular synth is a collection of devices that you connect just like stompboxes on a pedalboard. However, synth modules offer greater flexibility than stompboxes because, in addition to passing audio, they accept and/or generate control voltages (CV), which can modify sound parameters in real time with greater resolution than MIDI.

The first step in building a system is to determine what you want it to do. Besides their adaptability for lead and bass duties, modulars can be used for sound design; for sequencing; for signal processing pre-recorded or live input by means of filtering, waveshaping, and modulation; or for some combination thereof. Although you might configure your instrument for a specific purpose, many of its modules can do double or triple duty. For example,



Modular!



A big challenge in building a modular synth is being able to try before you buy, as relatively few shops carry modular gear. But they *are* out there, and many such stores amount to community hubs and information centers for the local or regional modular scene. Here are some of our favorites.

Analogue Haven	Pomona, CA	analoguehaven.com
Big City Music	Los Angeles, CA	bigcitymusic.com
Control	Brooklyn, NY	ctrl-mod.com
Control Voltage	Portland, OR	controlvoltage.net
Foxtone	Minneapolis, MN	foxtonemusic.com
Noisebug	Claremont, CA	noisebug.net
Robotspeak	San Francisco, CA	robotspeak.com
Switched On Music	Austin, TX	switchedonaustin.com

In addition, the Mostly Modular Trade Association (mostlymodular.com) is an advocacy group for musicians and manufacturers alike, and a great front door into the community.

the filters you chose for your synth can also process drum samples from your iPad or DAW.

While a modular gives you extensive modulation and routing options compared to a preconfigured synth, one thing you lose is instant patch recall: Every cable and parameter has to be set manually. In addition, your modular will likely be less compact and portable, especially if you're used to virtual synths. And, of course, a modular system will cost more per feature than a "slab" synth. However, the exponential increase in sound quality and timbral diversity will be worth the extra patching time and additional desk space.

Don't Be Analog Retentive

Though many great synth modules are analog, modular synthesis doesn't imply analog exclusivity—nor should it. As with every other aspect of

CASE STUDY: STARTER SYSTEMS

Many manufacturers sell a set of basic modules along with a case and power supply. Pittsburgh Modular, for example, offers the Cell[90] Foundation Desktop ($1,699), a great Eurorack starter synth that packs a lot of punch in a compact space. It's designed for keyboard control and subtractive synthesis, which is sometimes referred to as the "East Coast school." It includes a MIDI-to-CV module, two oscillators, a filter, the M2 mult/mix module for splitting and combining signals; the Modulator; a four-channel mixer/attenuator; the Toolbox, which includes slew, a signal inverter, and a noise/sample-and-hold section; and an output section featuring a pair of 1/4" line-level outputs and 1/4" stereo headphone jack. The included 15 cables are just enough to patch a moderately complex sound.

While the 13 modules in this system may look ordinary at first glance, their features greatly expand the timbral palette. The MIDI module, for example, has two gate and CV outputs and three operational modes: monophonic, duophonic, and dual mono. Duophonic lets you play two notes at once, and dual mono patches two separate MIDI channels to independent CV/gate sources, letting you (for example) play a different line on each oscillator.

The Modulator looks like a standard ring modulator, but it offers two additional modes: Floating Z, which adds the ambient system voltage in with the ring mod output, and Linear Amplitude modulation, which sums the ring mod output with the carrier signal. This last feature produces a very rich sound and is my favorite part of this system.

The filter also includes some interesting features. Besides offering independent lowpass, bandpass, and highpass outputs, it has an "L-H" output that, with the help of the LH knob, morphs between lowpass, notch, and highpass filter types. You can also switch to Oscillator mode, forcing the filter to resonate. The resulting tone can be blended with the input signal to create some wickedly complex timbres.

Pittsburgh Modular offers a similar-sized Cell[90] Foundation Expander system ($1,399) that adds additional mixer, splitter, dual VCA, and dual four-stage envelope modules, as well as a multi-purpose I/O module, eight-step sequencer, voltage-controlled LFO, dual-frequency-modulated oscillator, waveshaper, and a bucket-brigade analog delay. Together, these two starter systems are very powerful yet easy to wrap your head around if you're new to modular synthesis.

If you're looking for something even simpler, but with patchability, Pittsburgh sells the Cell[48] System 1 ($599), a complete single-oscillator synth voice. The System 1 is semi-modular, which means you can play it via MIDI without having to patch anything, and the footprint is smaller. The company also offers System 2 ($699) and System 3 ($799) expansion sets.

technology, digital signal processing has entered the mainstream of modular synth design. While the control signals themselves—CVs, gates, and triggers—remain analog and yield unmatched resolution, much of the innovation in this field involves onboard DSP. In general, DSP-based modules can do things that would be expensive (or impossible) with analog circuitry alone.

Just like any other class of instruments, some modules sound fantastic, some sound mediocre, and others just plain suck. For the most part, the sound quality of a module is the result of its design and construction, not whether the module has analog or digital circuitry behind the panel.

You can still be an analog purist and assemble an affordable and versatile system. But if you want elaborate control capabilities or sophisticated time-based audio processing, such as the Make Noise SoundHack Ecophon ($399) offers, it's worth investigating the world of DSP-based modules.

No Special Keyboard Needed

The good news is that you can use any MIDI controller to play your modular system as long as you have some sort of MIDI-to-CV converter. Many modular enthusiasts resist using MIDI, instead using the gates, triggers, and CVs generated by sequencers, LFOs, envelope generators, and analog controller keyboards.

MIDI-to-CV conversion can be done with a dedicated module or by using a standalone device. Doepfer offers a variety of MIDI-to-CV modules, as well as the A-192-2 ($190) CV/gate-to-MIDI/USB interface, should you want to control your other synths from your modular. Additional manufacturers of MIDI-to-CV modules include Analogue Systems, Analogue Solutions, Kilpatrick Audio, and Pittsburgh Modular. Kenton has a line of stand-alone converters available in various sizes and price points, while Doepfer recently introduced the Dark Link ($170), a USB/MIDI-to-CV converter based on the circuit used in its Dark Energy modules.

For high-level DAW integration of your modular, you have several options. Expert Sleepers sells a variety of hardware modules and software plug-ins that offer high-resolution, bi-directional control. Similarly, MOTU Volta (reviewed Aug. '09) is a plug-in that sends control voltage signals through the audio outputs of compatible computer audio interfaces. A highly anticipated feature of Propellerhead Reason 7 (see page 54) is the External MIDI Instrument, which gives you a way to control your modules from the software's sequencers and devices. On the other hand, if you

Time for a Reality Check

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You trust your friends to tell you the truth and go to them for a reality check when you are not sure what to do next. It should be the same with your studio monitors. You need to trust your speakers to tell you the truth about your mix, not deceive you with over exaggerated bass or highs.

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YAMAHA

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CASE STUDY: STATE OF THE ART

At the other end of the scale is the Make Noise Shared System ($3,189). Inspired by the design philosophy of Don Buchla, it's an excellent example of the "West Coast school" of synthesis, where realtime modulation plays a major role in not just sound design but music composition as well.

This system includes a dual analog oscillator (DPO), a voltage-controlled filter/amp combo called a lowpass gate (Optomix), a complex LFO/envelope follower (Maths), a 16-stage sequencer (René), an "entropy generator" (Wogglebug), a balanced modulator (modDemix), a touch control surface (Pressure Points), and two signal processors (Echophon and Phonogene). Describing the features of any one of these modules would require a review-length article, so I'll try to give the flavor of the system as a whole.

The overall vibe of the Shared System comes from the elaborate cross-modulation capabilities of the DPO and the tone shaping of the Optomix. The DPO is a dual analog oscillator with a well-designed internal routing scheme, exponential and linear FM (simultaneously if needed), hard sync, and external voltage control over waveform, waveshaping, and harmonic content. Even without patching, this oscillator sounds fantastic.

The Optomix is a dual lowpass gate (LPG) capable of recreating classic woody percussion sounds *a la* Morton Subotnick. The Strike input accepts a pulse to open the gate, while the setting of the Damp control shapes the decay. The use of vactrols in the circuit are responsible in part for the characteristic timbral shift and attenuated ringing of this LPG, which is one of the best sounding on the market. The two LPGs are summed to a single output at the bottom of the module, and an Aux input is provided for mixing in an additional signal.

The Maths module could also be called a "complex function generator," because it goes well beyond the four-stage ADSR envelope (though it can do that as well). The module has four signal inputs, two of which accept triggers and offer voltage control over rise and fall time. If you're interested in self-generating patches that take on a life of their own, this is a must-have.

What makes the Shared System a *performance* instrument is the inclusion of the Pressure Points touchpad module and the René sequencer. Pressure Points has four copper plates that sense skin capacitance, and each plate has a discreet CV output based on "pressure"—more accurately, the area of finger contact—as well as a gate output. In addition, there are four columns of three CV pots, with a CV output at the end of each row. Although precise pitch control using capacitance keys is nearly impossible, they're exceptionally expressive as controllers.

The René is pretty deep as far as sequencers go, but it's easy to learn and fun to use. It starts with a 4 x 4 matrix that you can scan through vertically and horizontally using CVs patched into the X- and Y-axis clock inputs. Using two quasi-random signals from the Wogglebug, you can trace through the array in non-linear ways to get some very hip melodic patterns from either of the CV outputs, one of which is quantized. The grid of knobs can be used to tune the output voltages, while the touch pads have multiple functions such as latching and unlatching notes, or selecting programmed sequencing patterns. Finally, the René module gives you an unprecedented amount of control over sequencing for the price.

JAMES HUSTED

Fig. 1. The height of various module formats, left to right: Eurorack, Frac Rack, a pair of 4U modules (Buchla and Serge, respectively), a pair of 5U modules, and the slightly taller (9″) Cyndustries/Modcan format.

want to control things in the other direction and synchronize your DAW to your modular system, check out the Innerclock Systems Sync-Gen II ls ($660) and Sync-Gen II Pro ($750) modules, which feature DIN sync and MIDI outputs.

A number of keyboards that have CV and gate I/O are widely available. The majority of products by Moog Music—from the Voyager and Phatty synths to the Moogerfooger pedals—have some sort of CV/gate connectivity. These can be enhanced using the VX-351 CV Output and VX-352 CV Input expanders for the Minimoog Voyager or the CP-251 Control Processor.

Other manufacturers have noticed the growing popularity of CV/gate as a means of playing notes and tweaking your sound. Examples include the Arturia MiniBrute (reviewed Nov. ’12), the Korg MS-20 Mini, and the Akai Max25 and Max49 controllers (reviewed Oct. ’12). Because these keyboards offer MIDI over USB, they can bridge your DAW and modular synth. Although it’s pricey, my favorite controller is the Analogue Systems French Connection ($3,199), which combines a 49-note keyboard and a ring-and-wire glide control in the style of the Ondes Martenot. It’s also a controller favored by Trent Reznor of Nine Inch Nails.

Doepfer makes a variety of control products for modular systems. On the traditional side is the A-100CGK ($599), a four-octave CV/gate keyboard with three CV outputs, a gate output, and MIDI I/O; the RM2 MIDI Ribbon Controller ($399), which has a pair of CV outs, a Gate output, and MIDI I/O; as well as modules such as the A-178 Theremin Control module ($110) and the A-179LCV ($90) light-control voltage source.

If you’re interested in other types of gestural control, Synthwerks offers a number of modules featuring force-sensing resistors. A more elaborate controller is the Make Noise Pressure Points ($215), which uses capacitive touchplates to generate gate and CV signals. Also, Eowave recently introduced a pair of Eurorack modules that generate voltages when used with the company’s extensive line of sensors that measure pressure, tilt, G-force, temperature, and other factors.

Module Formats

The breadth of proprietary module formats has coalesced into three main form factors—5U, Eurorack, and Fractional Rack (Frac)—with a few more that are proprietary (see **Figure 1**), such as designs by Buchla and Mattson Mini Modular. While nearly every module on the market today plays well with other manufacturers, you’ll be happier if you keep the majority of your module purchases to one rack format, because each format has its own cable needs, power supply connections, and panel dimensions. Deciding on panel and connector size is one of the biggest decisions you’ll make.

For example, Moog-style modulars have large knobs, 1/4" cables for audio and CV patching, and panels that are 5U (8.75") tall and measured in 1.75" rack units for width. These take up more space than the competing formats, but you’ll appreciate the extra panel space and large controls when you’re programming a sound through a jungle of cables. Synthesis Technology/MOTM, Synthesizers.com, Modcan, MacBeth, and Moon Modular are the active companies in this format. If you like a large format but prefer using stackable banana plugs for patching, check out Modcan, and Cyndustries.

Although the giant systems associated with Wendy Carlos and Keith Emerson are impressive, the instrument you assemble doesn’t have to take up an entire wall. The current market leader in modular formats is the Eurorack, which has panels that are just over five inches tall and panel widths measured in HP (horizontal pitch) units of 0.2" each. This form factor boasts 90 manufacturers and nearly 800 modules—and counting. Eurorack modules use 1/8" (3.5mm) mini jacks and have smaller controls than the 5U systems, resulting in greater feature density in a smaller amount of space—an advantage or a drawback, depending on your point of view.

At 3U tall, the Frac Rack format is roughly the same height as the Eurorack, and also uses 3.5mm jacks. The main difference between the two is in the rack size and power supply voltage: Frac Rack requires a ±15V supply, while Eurorack uses ±12V. While this format doesn’t have nearly as many manufacturers or products as Eurorack, Frac users are a small and loyal bunch, so someone will always be supporting it. The major players in this form factor are Blacet Research, Synthesis Technology/MOTM, and Metalbox.

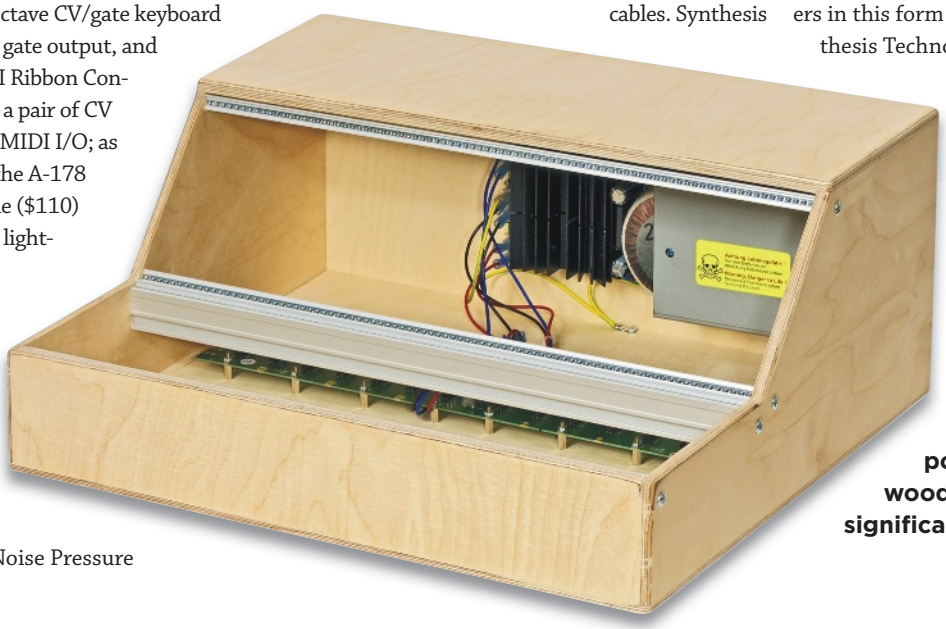

Fig. 2. The new Doepfer case with rack rails and power supply. The unfinished wood brings the cost down significantly.

Cases and Power Supplies

Once you’ve determined your module size and cable preferences, you’ll need a case and power supply. Many modular synth enthusiasts build their own cases. My favorite example

is the 5U system of ambient composer Robert Rich, where the modules are screwed directly into a wooden cabinet he designed and built himself—simple and neat.

If you purchase a case, it's likely to be a major portion of your initial investment. Keep in mind that a quality power supply results in reliable and low-noise audio, while a robust case protects your modules for decades.

Many manufacturers sell cases, cabinets, and power supplies separately, together, or with a complement of modules. Entire systems in the larger formats are available from Synthesizers.com, Modcan, and Cyndustries. A good source for sturdy Frac Rack frames and power supplies is Blacet Research, which just introduced its Rak-2 line ($299–$669).

The Eurorack format has a greater number of options. On the inexpensive side of the spectrum are Tiptop Audio's μZeus ($85) flying bus board, Zeus powered bus board ($160), and Happy Ending Kit with rack ears ($149), as well as the Doepfer A-100 Minicase ($120–$140), the A-100 DIY Kit #2 ($99), and the new A-100LCB angled case (prices TBA; see **Figure 2**). At the upper end is Tiptop Audio's Station 252 folding case ($1,250–$1,400 without power supply) and Doepfer's line of Monster Cases ($1,999–$3,699). In between you'll find an assortment of cases, racks, and accessories for mounting and powering your Eurorack modules from ADDAC System, Analogue Systems, Analogue Solutions, Enclave, Goike, Gorillabox, and Monorocket. Companies offering complete systems (case, power supply, and modules) include Blacet, Doepfer, Make Noise, Pittsburgh Modular, and Synthesizers.com.

Modules, Modules, Modules

Admittedly, there *is* an overwhelming number of modules out there, and at first glance, building a basic system may seem an insurmountable task. But if you figure out what you *need* (as opposed to what you want or what looks sexy) and you use online resources such as modulargrid.net (an interactive configurator for the Eurorack format), you can sort out a satisfying starter system.

Keyboardists who want to begin with a basic subtractive synth voice will need (at the very least) an oscillator or two, a filter, a pair of envelope generators and VCAs, an LFO for modulation, and either a MIDI-to-CV module or a keyboard controller that outputs CV and gate directly. One approach is to pick a set of modules that emulates the signal flow of a known vintage synth. For example, the Minimoog held three oscillators, a noise source, a resonant 24dB-per-octave lowpass filter, glide (portamento), a pair of envelope generators, and a mixer—in fact, it was basically a hardwiring of the most frequently recurring patch type among Moog Modular users. The Oberheim SEM, on the other hand, featured two oscillators, two envelopes, and a resonant 12dB-per-octave multimode filter. Several companies make filters that emulate the sounds of both of these instruments, and indeed, the Moog and Oberheim filter characters are different enough that serious synth players tend to want both. However, an old-school vibe is not the only way to go.

Modules typically fall into one of two design categories, with a wide difference in price and performance between them: simple, single-purpose modules or more complex, multi-purpose ones. A basic oscillator will offer basic waveforms (sine, triangle, sawtooth, and square), include a CV input or two for pitch, and perhaps have inputs to control pulse width, sync, and FM. Expect to pay around $100 for such an oscillator. Multipurpose oscillators will have additional control inputs, perhaps offering linear and exponential FM, or quadrature outputs (jacks offering the waveform at intervals of 90-degree phase differences). Both of these features greatly expand your modulation capabilities, and will ultimately take up less space in your rack because they're integrated into the oscillator panel. Here, offerings range from about $200 to over $1,000.

Fig. 3. The WMD Micro Hadron Collider is a dual VCF in Eurorack format that sounds great and offers a lot of functionality in a small amount of space.

Similarly, control modules run the gamut from simple to complex. A basic envelope generator has variable attack, decay, sustain, and release stages, and it might include CV inputs for each stage. A more complex version will have a retrigger function (so that the module can double as an LFO), or offer an end-of-cycle pulse output. The 4ms Pingable Envelope Generator ($345), for example, is a dual EG that can multiply or divide the trigger input, while giving you extensive control over the output shapes.

Modulars excel at subtractive synthesis, and filters provide a lot of the action in such a system. Here, Moog-like four-pole lowpass filters abound, but there are numerous other options. Again, straightforward filters that offer lowpass, highpass, and bandpass results can be relatively inexpensive and take up little space, but a feature-rich filter will rarely sound bland and will likely cost you more. For example, the WMD Micro Hadron Collider ($339) is a dual multimode filter that offers serial or parallel processing, a phase switch, an integrated voltage-controllable mixer, and, most importantly, it sounds awesome—exactly what you want (see **Figure 3**).

While sound quality is one of the primary goals of your system, it should also be fun to use and musically satisfying. If you examine what you like best about the synths you currently play and adapt those controller and sound aspects to the modular system you design, you'll wind up with an instrument that will not only be sonically exciting, but will constantly inspire you to create new soundscapes and compositions. ♫

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Keyboard K KEYBUY AWARD

ROLAND
V-Combo VR-09

BY RICHARD LEITER

ROLAND'S V-COMBO LINE HAS ALWAYS BEEN ABOUT LIVE PERFORMANCE keyboards that put drawbar organ sounds center stage but bundle in other gig essentials like acoustic and electric pianos, synths, strings, basses, brass, and more. The new V-Combo VR-09 puts some new twists on the concept: First, it's so easy to use that you can walk onstage and split and layer it all night without cracking the manual. Second, the entire keyboard weighs about 12 pounds. Third, it has a price that we first thought was a misprint given all it does. About the only thing it lacks is onboard multitrack sequencing, because it's not meant as a workstation. The VR-09 is for playing—so let's play.

Overview

Power-up to playing takes five seconds, after which you're in Piano mode by default. The piano section's four big buttons summon nine or ten sounds in each of four categories: acoustic piano, electric piano, Clav, and "others." (More on these in a bit.) When you do the one-finger-fandango through these patches, you'll be impressed by how much sonic variety is covered in such a blessedly short list. (When a bandleader at a pickup gig calls an unexpected tune, you don't need to scroll through 30 variations on a Wurly. You need speed.)

There are two other main sections. Organ mode is a clonewheel with all the bells and whistles: drawbars; harmonic percussion; vibrato/chorus; upper, lower, and pedal parts with the ability to use another keyboard as the lower manual; a dedicated input for a PK-9 pedalboard; and rotary simulation with speed control via a panel button, a pedal, flicking the pitch lever, or Roland's D-Beam optical sensor.

The third section, Synth, has eight category buttons with all the other sounds we rely on: fat "analog" basses and leads, punchy brass, Jupiter-8-like pads, that Harmon mute trumpet (for "My Funny Valentine" requests), an uncanny oboe, and much more.

A Drum section features 17 kits (including the TR family, 606 through 909), 100 pre-programmed patterns, a MIDI/audio song player (for files on the USB stick inserted into the "garage" on the far left of the panel), and the current must-have crowd-pleaser, a looper.

Then it gets fun. All sounds are routed through the carnival midway of six realtime effects knobs, and on many non-organ sounds, the organ drawbars double as sliders that let you tweak filter cutoff, envelope settings, and the like.

Now would be a good time to mention that total polyphony is an industry-standard 128 voices, not the 64 we might expect on a stage keyboard at this price.

Piano Section

Right out of the gate, the acoustic piano sounds are gorgeous, most notably "GrandPianoV" which is emotional at all dynamic levels and smooth over its entire range.

Fig. 1. The iPad editor app reveals the depth of the VR-09's organ model, which includes adjustable upper and lower rotor speeds and transition times, tonewheel leakage, key click, and more.

Every manufacturer processes their main piano sound for their assortment of rock, dance, honky-tonk, romantic, and trippy pianos, and Roland does that here. You need those presets less on this keyboard, though, because with all the effects knobs, you can tweak your piano as you play. Is your grand not cutting through on your rock gig? Dial in some compression and a brighter tone and they'll hear you in the ladies' room. The only below-average piano sound is the mono preset (monaural, not monophonic), which is murky. I like dedicated mono piano patches, but in this case, you're better off using the left/mono out on one of the stereo patches.

Roland electric piano sounds have long been realistic and vibey, and this batch is no exception. "Vintage EP" is dead-on '70s Rhodes, "Stone EP" is the same multisample through a Phaser, and "Tremolo EP" has the auto-panning of a Suitcase model. You'll find your favorite FM and Dyno EPs, and the Wurly spits nicely when you treat it rough. Funk players will love how the excellent DSP—wahs, phasers, chorus, and even rotary—amps up their Clavinet grooves.

The Others button in the Piano section gives you a tasty assortment of accordions, harpsichords, unusual organs, and harmonicas—which seem odd in a section called "Piano" but are actually very handy to have here. You're never more than one button press from a ballsy blues harp solo.

Organ Section

The VR-09's organ offers three main presets for overall tonal character: Rock, Jazz, and Transistor. The first two are tonewheel models; the third is a Vox simulation that retasks the drawbars to the footages and sine and triangle wave volumes found on the real thing. Drawbar settings, details like harmonic percussion, and associated effects are so easily saved to one of the 100 Registration memories (which also save the entire state of the instrument) that you'll craft your own in no time.

As to sound authenticity, the V-Combo's "SuperNatural" modeled tonewheel organ is very good, but it doesn't upstage more expensive clonewheels like the Hammond XK-3C or Nord Electro 4D. High drawbars at fast rotary speed is where you'll hear a bit of a difference, but overall the simulation is deep and full-bodied—not some LFO-like wobble.

It gets more throaty and realistic if you combine it with C3 vibrato/chorus. For a bar gig where you're playing Booker T. and Santana covers, the VR-09's organ section will do the job with aplomb. Via a connected iPad and Roland's VR-09 Editor app, you can get to all of the Organ section's many parameters at once (see **Figure 1**).

Synth Section

The Synth section is amply stocked with all the sounds that have made Roland ROMplers so desirable since the early JV days: Jupiter strings and brass; jazz horn sections for stabs; choirs, pads, and vibes; every kind of lead synth you'd want; and acoustic, electric, and synth basses for every situation. You'll be tickled by patches like "Harmonderca" with its Toots Thielemans-esque edge; "OB Strings," which really captures the warmth of an Oberheim polysynth; and a nylon-stringed acoustic guitar that's further illuminated by the Hexa-Chorus effect. An iPad app lets you dig deeper into the synthesis engine for heavy-duty editing (see **Figure 2** on page 52).

Drum Section

While the drum kit sounds in the VR-09 are authentic and punchy, they're not used to great advantage in the pre-programmed rhythm patterns; maybe future updates will provide a more vital selection. The real fun in this section is the audio looper, which—if you haven't played with one—is an exciting toy and tool. The VR-09 gives you about 20 seconds of stereo sampling time to lay down each pass: bass line, drum figure, synth riff, and whatever else, and you can save the results to a USB stick. You can also use the USB connection

Snap Judgment

PROS Modeled tonewheel organ with full drawbar control and convincing rotary simulation. Full complement of PCM-based sounds from pianos to synth to acoustic orchestral instruments. Can split or layer organ section with other sections. Lots of effects knobs. Drawbars double as synth editing sliders. Deep editing via free iPad app. Weighs 12 pounds.

CONS Unweighted action is stiff at the top of the key travel. No aftertouch. Data wheel requires a sensitive touch not to overshoot your goal. Keyboard limited to two-way split or layer—though you can get more with an external controller.

to record your performances in audio or MIDI form and play back audio files to solo over.

In Use

I'm a weighted-action, full-keyboard kind of guy. (Having said that, I must have played a million cover gigs on a pair of DX7s.) Where the VR-09 worked best for me was as the "top keyboard" above a stage piano. That let me comp with my left and play horn lines, organ riffs, or synth leads with my right. When the muse hit, I could stand and deliver ripping organ solos or build up serious comp tracks and grooves on a solo gig using the looper. I even used my digital piano to trigger the VR-09, whose already-good pianos and EPs really come alive under a weighted action.

You could show up to many gigs with just the VR-09, though, as you don't need seven-plus octaves of weighted keys to get through a night of covers. I did so on a date where I was the second-chair keyboardist, on songwriting sessions, and on impromptu jams. Did we mention it runs on rechargeable batteries?

The keyboard can address only two sound sections at a time (including upper and lower drawbar zones within the Organ section), so you can split and layer two sections out of four. Layering the Piano and Synth sections (or keymapped Drum hits with either of those sections) is a two-button operation: Hold a sound button from one section and press a sound button in the other. The layers appear in the LCD along with their volumes and octave selection. Pairs of increment buttons control the relative volumes of the Piano, Synth, and Drum sections; the Organ section uses a dedicated red drawbar. Splitting involves just one more button, which you can press and hold to pick a split point.

Can you split and layer the Organ section with the others? Yes—big praise here, as we were initially wondering if a tonewheel modeling mode would take over all of the VR-09's processing power given its low price. Doing so involves a couple more steps—basically you set up a Piano/Synth or upper/lower Organ combo, then change one of the parts in the LCD using the cursor buttons and data wheel. Save your setup as a Registration, and you'll only have to do this once.

On top of any existing split or layer, you can also bring in a drum pattern (since it's pre-programmed and not being played from the two-zone keyboard). You can access more sections at once if you hook up more controllers (*e.g.*, the lower-manual Organ part all the time from a second keyboard), plus an internal General MIDI 2 tone generator that's separate from all the sounds we've been talking about, by driving the VR-09 from a sequencer.

Effects and Realtime Control

If I were king of the world, every keyboard would have an effects section with dedicated knobs like this. The overdrive and compressor are totally WYSIWYG—turn clockwise for more—and the tone control makes the sound brighter. Adjustments you wouldn't usually make onstage because it's too much trouble, you now can't resist making. The delay knob dials in the wetness of a preset, but also brings up a screen that lets you pick from a smorgasbord of options including a cool tape delay emulation (think Roland Space Echo) and various tempo-synced panning types. Likewise, there are various rooms and types of reverb, with the knob controlling the wet/dry mix. MFX is Roland's grab bag of phasers, flangers, tremolos, choruses, wahs, and other time-based modulations, but also includes some novelties like a bit reducer and two Slicer effects, which cut in bits of silence that you control with a knob and can sync to the tempo of the onboard song player. It's on-demand stutter effect is a totally rad way to end a solo.

In Synth or Piano mode, the first three and last two drawbars become sound-shaping sliders. Each slider brings up a data window (-64 to +64) which is more than frill, because some of the envelope and filter controls can turn the sound completely off—so if nothing's happening, you can see at a glance and correct things.

The rotary effect actually lives in the Effects block, so you can put it on non-organ sounds if you like. Effects are routed serially in a fixed order from compression to reverb, so it's kind of like having seven stompboxes in a row. You can certainly choose how much of each effect applies to each section, *e.g.*, having only reverb on a piano and only compression on a bass.

Like an umbrella in a tropical drink, the D-Beam controller is unnecessary to some and delightful to others. It lets you use hand proximity to control parameters like rotary speed, pitch (think Theremin), and SFX, which is a collection of one-shot noises and articulation variants for four instruments. On these—trumpet, alto sax, flute, and acoustic bass—you can wave in elements like glissandi, growls, falls, slides, and harmonics. You can also bring these in with an expression pedal or the pitch-bend/modulation lever, but if you have a flair for showmanship, the D-Beam can be crowd-pleasing.

Fig. 2. In Synth mode, the Editor app shows that any sound from the VR-09's Synth section consists of three "partials"—each of which is an independent single-oscillator synthesis path.

Conclusions

The VR-09 just may be the ultimate what-you-see-is-what-you-get keyboard. It has a consistently playable and engaging sound library; a bonehead-easy user interface for splitting, layering, and editing; and convincing organ and rotary modeling—all in a seemingly impossible 12-pound package. We think of it as an ideal "first professional keyboard" that will remain quite welcome as your *second* pro keyboard when you do get that weighted stage piano or workstation. Then there's the price, which is extremely low for something that can satisfy your drawbar-pulling desires, cover your PCM-based piano, EP, synth, and other sound needs at the same time, and sound good at all of it. Verdict: The price-performance ratio of the V-Combo VR-09 earns it our Key Buy award.

Bottom Line

While the Roland VR-09 is not the only "Swiss Army knife" keyboard, its ease of use, startling lightness, and low price make it stand way out from the pack.

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Hands-on the VR-09 at NAMM, and Roland's latest how-to videos.

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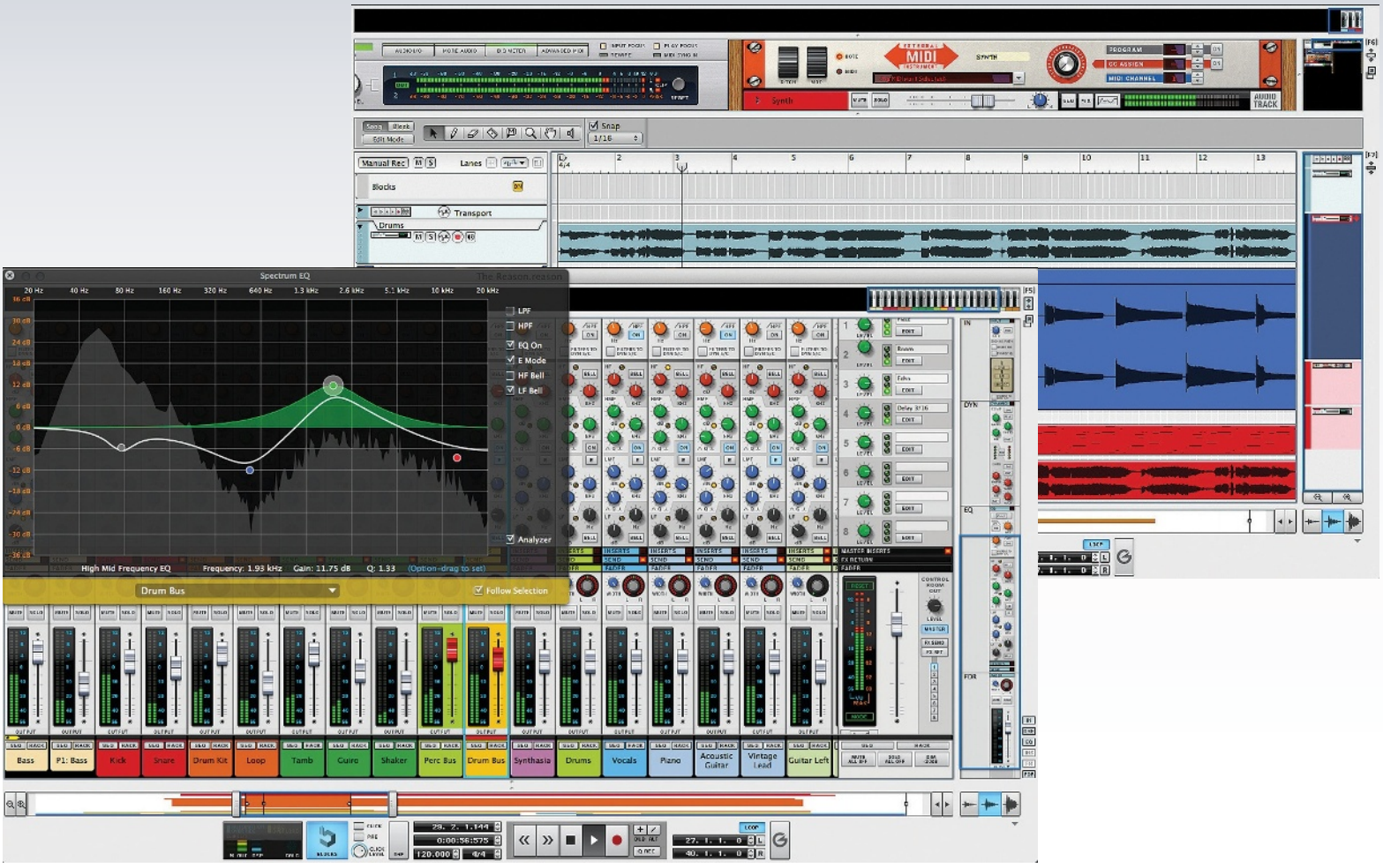


PROPELLERHEAD

Reason 7

BY JIM AIKIN

A FEW YEARS AGO, PROPELLERHEAD WAS EARNESTLY ASSERTING THAT Reason was not just another digital audio workstation and that it belonged in a separate category. Since then, they've kept adding highly desirable features that make it look more and more like a DAW, notably multitrack audio recording in version 6 (reviewed Apr. '12). That's a good thing, since they're still doing things their own way. Version 7 ratchets up the functionality several more notches.

Overview

The 7.0 release of Reason has three big enhancements: a MIDI out device for sequencing your hardware synths, better mixer bussing, and some very slick audio track editing. These new capabilities come on top of the marvelous Rack Extensions concept—essentially third-party plug-ins done Reason style—unveiled in Reason 6.5.

[*Read Jim's roundup of rack extensions at keyboardmag.com/reason-rack-extensions. —Ed.*]

For Mac users, Reason 7 requires OS 10.7 or later, so I had to buy the new OS. It also requires 4GB of RAM, so I had to upgrade my elderly MacBook Pro. My Windows 7 desktop machine, which is my main production environment, required no tweaking. If you need to install the 32-bit version of Reason in 64-bit Windows, which is necessary if you want to use it as a ReWire client in a 32-bit host, you'll find easy instructions on Propellerhead's website.

Reason is a complex program, with several dozen highly patchable modules for synthesis and sound processing, presented as a virtual studio rack that looks like hardware, right down to animated cables bouncing when you toggle the rear panel view. We hardly have the space here to recap Reason's many amazing features—a good place to start may be the numerous videos on the Propellerhead website. For *Keyboard* readers, the biggest deal is likely the new MIDI output, so let's start there.

Fig. 1. Reason's new External MIDI device can transmit MIDI to any output port defined in your system. Configuration settings are on the right side.

External MIDI Instrument

It's always inspiring when a new device just *works*. That was my experience with Reason 7's new External MIDI Instrument (EMI) module (see **Figure 1**). I never had to consult the manual.

I don't own nearly the amount of MIDI hardware that I did 20 years ago, but I still have my trusty Yamaha Motif XS. I hauled it out and hooked up the audio and MIDI cables. Then I launched Reason, created an EMI, and started playing my M-Audio Axiom master keyboard. The Motif responded. Sequencing a Motif track was just as easy.

The EMI isn't fancy but it gets the job done. The front panel sports a drop-down menu that lists all of the MIDI outputs in your computer. To the left are stubby mouse-controllable pitch and mod wheels, whose activity can be recorded. To the right are three settings: MIDI output channel, a program change number, and an assignable control change number, which is associated with a knob for recording controller moves.

The program change number can be automated, but the CC number and channel setting can't be. However, the latter parameters *can* be addressed from an external hardware controller configured as a Reason Remote device. What's cool is that the CC knob can be used to record MIDI control data for up to 120 different CC messages. All of these messages will be retained in the track. It isn't actually a single knob, in other words—it's 120 different knobs.

On the EMI rear panel are inputs for the Matrix Pattern Sequencer and "CV" inputs for mod wheel, pitch-bend, and the assignable knob. If desired, several EMI modules can be set to the same output channel, so you can use several Matrix sequencers to create polyphonic patterns on your hardware synth (a cool possibility that Reason's internal instruments can't manage).

There's no dedicated panel control for Bank Select messages, but these can be recorded into the track as CC 0 and CC 32 data. The manual for your MIDI hardware should contain cryptic information on which combinations of these messages you'll need.

After sequencing your external instruments, you'll probably want to record their output into Reason as audio tracks. The manual gives clear instructions on how to do this, including some suggestions about managing latency compensation.

Fig. 2. The new in-rack channel strip (top) has a fader and pan pot for quick access. The Audiomatic preset effect (center) is a free download for Reason 7 owners. The Synapse Audio Antidote synth (bottom) is available in the Rack Extension store; the lower edge of its panel is not shown.

What's missing from the EMI? It won't record or transmit system-exclusive data, but that's far less important than it was in the good old days. It also doesn't handle polyphonic aftertouch. The big omission is that when Reason is running as a ReWire client, the EMI won't transmit MIDI to the host software. If this were possible, you could use Reason's sequencer and employ the host for running virtual instruments that are neither native to Reason nor available as Rack Extensions. Let's hope Propellerhead adds this feature in the next release.

Audio Editing

ReCycle—one of Propellerhead's very first products—slices apart audio loops so they can be loaded into a sampler as single notes and then "re-grooved" via MIDI track editing or by simply playing notes. In the olden days, you'd load ReCycle REX files (since replaced by stereo RX2 files) into a hardware sampler. These days, software REX players such as Reason's Dr. OctoRex use them—but up to now, you still needed a copy of ReCycle if you wanted to create your own REX/RX2 files. Now you can do it directly in Reason.

Audio tracks are automatically given slice markers as they're recorded or loaded. There's no sensitivity control for slice detection (a feature found in ReCycle), but after putting an audio loop in a track, you can add or delete markers by hand if needed, or drag them left or right to change the rhythm without changing the pitch of individual notes, or even quantize the slices. Changing the positions of the slice markers can be done with key commands or by holding Alt (Option on Macs) and using the mouse, and it works perfectly.

The sliced-up audio can be exported in RX2 format. This is ideal for drum patterns that you

Snap Judgment

PROS MIDI out for external instruments. Improved mixer routing. Audio tracks automatically sliced for time-stretch and RX2 file use. Computer authorization now supported.

CONS MIDI out not transmitted to host DAW via ReWire.

Fig. 3. The Spectrum EQ gives you graphic editing of the EQ curve, on top of an animated display of the frequency spectrum.

want to edit to add fills, or for snare substitution. Transferring an audio clip into Dr. OctoRex takes about three clicks—it's totally easy. In addition to bouncing out as RX2, you can bounce the slices as samples for use in Reason's NN-XT, Kong, and ReDrum instruments.

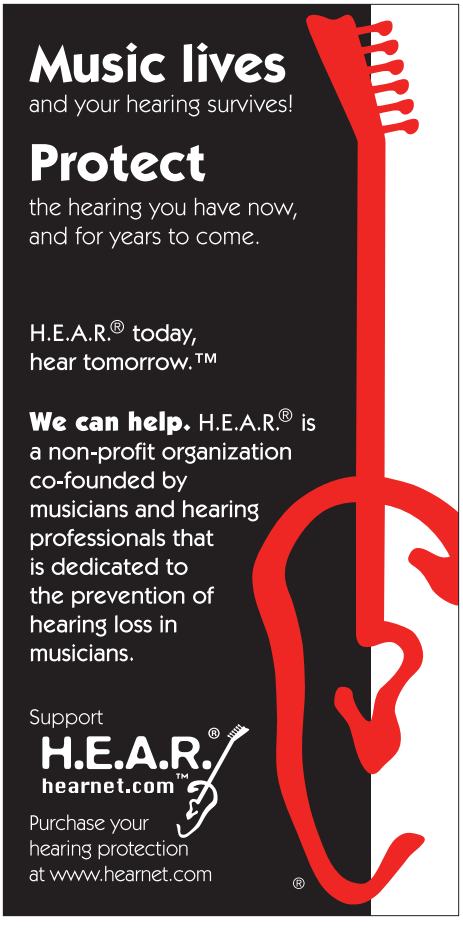
There's an upper limit on the number of slices in a REX file. If your audio has more than 92 slices, only the first 92 will be transferred to Dr. OctoRex. Since MIDI defines 128 note messages, 92 is an odd limitation, but most loops won't need more than 64 slices. If the 92-slice limit is a problem, you can easily split a long audio clip into two or more pieces and export the pieces to separate instances of Dr. OctoRex.

Because the audio is pre-sliced, if you later need to change the tempo of the song, the audio will automatically be adjusted, and without too much degradation. I tried loading a drum loop in an obviously wrong tempo for my song and then stretched it by selecting all of the slice markers and dragging the one on the right end, slowing down the loop so that it lined up with the rest of the instruments. The workflow was easy, and the results sounded very acceptable. (Large stretches do tend to produce phasing artifacts.)

Parallel and Bus Channels

While not groundbreaking, the new mixer features are welcome. In previous versions of Reason it was possible to set up parallel mix channels, routing one source signal to two or more mixer strips, but you had to do it by hand using a Spider Audio Splitter or something similar. In Reason 7 the process is painless and easier to manage. Just right-click on a mixer strip and choose "Create Parallel Channel" from the pop-up menu.

You can create multiple parallel channels for a single audio source if you like. Using these, you can do tricks like compressing a drum track while mixing in uncompressed signal to add punch, or



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run a vocal through a filter but also bleed in the unfiltered vocal for clarity.

Also new are bus channels. Select two or more mixer strips and choose "Route to > New Output Bus" in the menu. Bus channels are ideal for multitrack drum recordings, horn sections, and so on: You can group the source audio and then mute and unmute, adjust the level, or add effects from a single channel strip.

The third new mixing feature is not in the mixer per se. The mixer input channel modules in the rack itself have been beefed up with their own faders, pan pots, and meters, which duplicate the functions in the mixer panel itself (see **Figure 2** on page 55). This improves the workflow, because you no longer have to switch back and forth from the rack to the mixer in order to make basic adjustments.

Other New Features

Up to now, you could run Reason in one of three modes with regard to licensing: demo (fully functional except that your saved songs can't be reloaded), with an Internet connection to verify that your account has a license, or using a USB dongle. There's now a fourth mode: You can authorize your computer itself so that neither the dongle nor an Internet connection is needed. This is convenient if, for example, you want to use Reason on a laptop while riding the subway.

At the top of each mixer strip is a button that opens a new interface for the channel EQ (see **Figure 3** on page 56). Called Spectrum EQ, this pop-up window has a realtime animated frequency display, on which you can drag colored dots to change the channel EQ. These dots duplicate the functions of the channel strips' existing EQ controls.

A new plug-in effect, Audiomatic Retro Transformer (see **Figure 2** again), is a free download (if you have Reason 7) from the Rack Extensions page in your Propellerhead account. Its features are minimal: 16 buttons for choosing a preset effect, a wet/dry knob, and a general-purpose Transform knob, which adjusts some parameter on whatever effect you've chosen. A couple of the effects, such as Tape, might be useful for processing an entire mix. Others, such as Cracked (distortion) and Psyche (a stereo flanger) would be better for processing single tracks.

Conclusions

Producing music in Reason has always been fun, but version 7.0 comes closer than ever to being a serious do-everything production studio, without sacrificing the interactive and intuitive workflow. If you own hardware synths, the External MIDI Instrument device is a must-have, and the audio slicing and time-stretching will be a huge plus for anyone who has an audio loop library or needs to stretch an *a cappella* vocal for a remix. While Reason 7 is not revolutionary in terms of having features nothing else has, what it does have is a huge step forward, and the way it integrates and presents these features is unique among music creation platforms. ♫

Jim Aikin has been writing for *Keyboard* for more than 30 years, and is an accomplished pianist, orchestral cellist, and electronic composer. His books include *Power Tools for Synthesizer Programming* (Hal Leonard) and *Csound Power!* (Cengage Learning).

Bottom Line

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MELLOTRON M4000D

BY TOM BRISLIN

BEHOLD, THE MIGHTY MELLOTRON. LIKE ITS PREDECESSOR THE CHAMBERLIN, it used racks of tape containing recordings of real instrument sounds, and can fairly be thought of as the original "sampler." It became part of the pop music landscape in the 1960s and part of the progressive rock movement in the 1970s. It faded into legend as more portable and reliable technology such as digital samplers came to the fore, but there's something about it that has kept us coming back. While its iconic sounds have found their way into modern synth workstations and software, the M4000D represents the ultimate expression of the classic Mellotron playing experience using digital technology.

Snap Judgment

PROS Handmade boutique quality. Real wooden Mellotron key action. Gorgeous 24-bit samples of classic sounds. Polyphonic aftertouch. Expandable. Instant layering of any two sounds.

CONS Handmade boutique price. Modified foot controllers required for some control features.

Wood and Metal

From a birds-eye view, the M4000D resembles the classic M400 and current Mk. VI (a modern tape-based Mellotron): Its white wooden case (other finishes can be ordered) houses a 37-note keyboard, controls to the right of the keys, and flat top that can support an additional small keyboard or other gear. Unlike its elders, the M4000D is only 5.25 inches tall and weighs 33 pounds. The lid opens to reveal the same wooden key action as in the Mk VI. The keyboard is a joy to play, and is lighter and faster than the old 400's more resistant action. It's refreshing to see a modern digital instrument that employs wood and metal the way the M4000D does—there's no denying its high-end stage presence.

Sounds

The M4000D comes with 100 sounds drawn from various Mellotrons and Chamberlins. It's bi-timbral, and there are always two active sound slots, A and B, with sounds loaded and ready to play. By turning Select A or Select B you immediately get access to any internal sounds or the 100 sounds on an inserted expansion card. In spite of their high quality (which suggests large sample sizes), sounds have no load lag. Each slot has its own screen, displaying a graphic of the particular instrument from whose library the sound originated (see **Figure 1**). The Mix knob blends the two slots.

Press the Select B knob for a convenient list

Fig. 1. XLR and 1/4" master outputs offer a monaural blend of sound slots A and B. Direct A and B outs bypass volume and tone controls for mixing and panning the slots using an external mixer.

Fig. 2. In addition to the vintage-looking knobs, toggle switches, and lovely backlighting, the M4000D has two color LCD screens that correspond to the two blendable sound slots.

view of the presets, and press it again to enter a custom playlist mode to assign and access user-definable favorites. The presets include Mellotron classics like strings, woodwinds, lesser-used standouts like vibraphone (a personal favorite of mine), brass, mandolin, and other keyboards and percussion. You won't find the rhythm and accompaniment tracks that were in some of the original Mellotrons, but they, along with lead sounds, will be part of the first available sound expansion, a custom Compact Flash card.

The sounds are impeccably reproduced from the original tapes at 24-bit resolution, with one sample per key and, like the original, have a duration of about eight seconds with no loops. The M4000D's sounds remain sustained if you change presets while holding keys, which is great for live performance. You can opt for some velocity sensitivity to volume, and also bring in more volume via polyphonic aftertouch. A high-low toggle in the middle of the panel drops the sound an octave. Another nifty feature is that you can choose subtle EQ characters for the instrument globally: a cleaner, clearer output with "Chamberlin M1" or a slightly muted vintage character with "Worn Tapes" (Mellotron M400). The sounds by default had a bit of a longer decay, but I was able to quickly change that setting to the more 'Tron-like (and organ-like) instant stoppage of sound once I released a key. You can also define the "tape rewind time," which will make 'Tron fans happy. Don't go looking for reverb or multi-effects here, though. It's not that kind of instrument.

Audio and MIDI

Audio is handled by the same analog volume and tone control pots found in a Mellotron Mk. VI if you use the master output. These controls are bypassed when using the A and B direct outs (see **Figure 2**). There's no *stereo* unless you pan the A and B outs using an external mixer, but tape-based Mellotrons are monaural as well. The volume pedal jack is meant for an audio volume pedal such as an Ernie Ball Jr.—plug the TRS end of a send-and-return Y cable into it, then the forks of the Y into the pedal's input and output.

The sustain pedal input can be assigned to "Release Time" (the 4000D's version of sustain), or to step incrementally through "playlists," which are pairs of sounds you can choose for quick access. Then there are two "Expr" (expression) pedal inputs. Expr 1 can control the A/B tone mix using a standard MIDI expression pedal. Both can also accept switch pedals to increment or decrement through playlist entries, *if* you modify the pedal by rewiring it to a TRS plug. This is both cool and uncool; it's nice to unlock more functionality in the instrument, but who's got time to solder? Sustain pedals from other manufacturers that support half-dampering (and therefore have TRS connectors) won't work in this application, so Mellotron may make properly modified pedals available for sale in the future.

The keyboard transmits polyphonic aftertouch as well as the more common "channel" aftertouch (you can choose which, or choose not to send aftertouch) and you can assign the Expr inputs to control parameters such as volume sensitivity to velocity and aftertouch. I did experience some stuck notes when using a sustain pedal and coarse resolution when using expression pedals. Consulting with M4000D creator Markus Resch, we troubleshot this to a specific MIDI malfunction on my review unit and verified that units in his possession were working properly.

Conclusions

At a time when instruments constantly leapfrog one another in terms of features for the buck, it's easy to overlook the courage it takes to produce a keyboard like the M4000D. I once lived with a vintage Mellotron M400, and as joyous as it was to play, there were plenty of times where inspiration took a hike before I finished changing tape racks. The M4000D captures much of the joy with nearly none of the maintenance, and it practically makes a game out of blending its character-rich sounds. Every time I've played it, it inspired composition.

For some, the price will surely be an issue. It's not cheap, but it's as fairly priced as you can expect any high-end, limited quantity, handmade-by-a-guy-in-Sweden instrument to be, and it's a downright bargain when compared to what a new (or well maintained vintage) tape-based Mellotron would cost. You can save a few hundred bucks by opting for the Mini model, which employs a semi-weighted Fatar action without aftertouch, has 1/4" outputs only (not XLR), and is built in a slimmer case. The M4000D is an inspiring realization of a beloved classic that adds modern conveniences while retaining the old-school magic. ♫

Bottom Line

To get the authentic Mellotron experience with minimal hassle, the M4000D is the definitive realization of the dream.

M4000D: $2,800 | M4000D Mini: $2,000 | Sound expansion: $500
mellotron.com

First look at the Mellotron M4000D.

keyboardmag.com/july2013

PPG WaveMapper

BY FRANCIS PRÈVE

JUST BACK IN JANUARY, WE LAVISHED WELL-DESERVED PRAISE ON WOLFGANG Palm's comeback app, WaveGenerator. Well, the man who once brought us the PPG Wave synth apparently has quite a few more tricks up his virtual sleeve because he's back with another iOS hit: WaveMapper.

Like WaveGenerator, WaveMapper is an incredibly deep synthesizer, but that's where the similarities end. In his latest synth, Palm takes an elegantly simple concept—mixing and matching important aspects of multiple synth patches—and implements them in a manner that's strikingly like a board game.

Under the hood is a three-oscillator synthesis engine with a sweet sounding resonant lowpass filter, stereo amplifiers, a delay, and a bunch of performance features like multiple LFOs and a groovy little arpeggiator/sequencer. But with WaveMapper's approach to synthesis, the intricacies of all of these parameters are a moot point. Yes, they're there if you want to build your sounds the old-fashioned way, but if you're new to sound design you can dive in and create your own sounds with extraordinary ease.

Here's how it works: WaveMapper presents you with an 8 x 4 grid of squares, each of which can contain a different preset. On top of the grid are eight "pieces," each representing a different synthesizer component. There are three discrete oscillator pieces, a filter piece, a noise piece, a gain (amp) piece, and two modulation-related pieces.

Placing a piece on one of the synth patches in the grid transfers those parameters to your current sound. Sound complicated? It's actually the easiest process, maybe ever. For example, you can grab oscillator 1 from a sitar patch, two more oscillators from a string patch, and filters from an ethereal pad patch, all just by moving the pieces around on your grid.

Things get way cooler when you have an arpeggiator in the mix, thanks to the seamless transitions when moving parameters and WaveMapper's ability to record your audio. Just fire up a cool arpeggiated preset, tweak the style and tempo of the arpeggiation to suit your track, fire record, and start moving pieces around the grid. You'll quickly discover what works and doesn't, but chances are you'll end up recording something you can use in a track that has massive character. Then, simply transfer the results when you sync your iPad and drop the file into your DAW of choice.

As for the die-hard programmers out there, keep in mind that once you've composited a sound you like, you can dive into each of the elements and tweak familiar parameters directly, customizing the sound to your heart's content. You can even import your own audio files to transform into exotic wavetables if you're feeling ambitious.

So, if the depth and complexity of WaveGenerator was a tad too intimidating for users, WaveMapper has that problem solved with real innovation and an interface that brings the *fun* of sound design to a whole new generation of producers. ♫

Snap Judgment

PROS Unique game-like approach to synthesis. Intuitive interface lets novices get results quickly. Deep synthesis tools give power users a wealth of detailed sound design opportunities. Can import audio for wavetable creation.

CONS You'll still have to crack the manual to understand the basics.

Bottom Line

A very cool new approach to synthesis for all skill levels.

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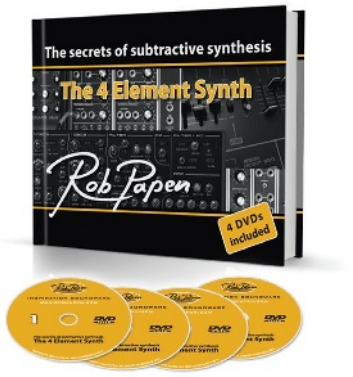

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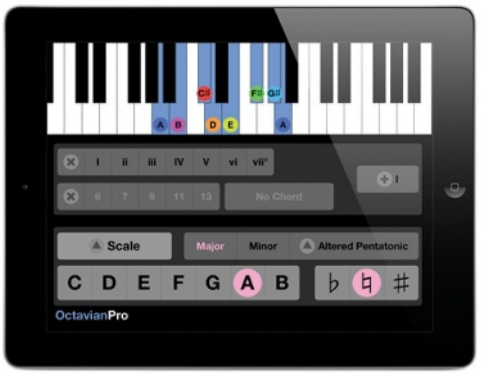

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By Bitnotic

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5 THINGS I'VE LEARNED ABOUT Getting the Most from Mastering

BY GREG CALBI

Mastering engineer **Greg Calbi** has worked on over 7,500 albums by artists like John Lennon, John Mayer, Paul Simon, and others. Find out more at sterling-sound.com.

I'VE BEEN MASTERING RECORDS FOR 40 YEARS AND HAVE WORKED ON everything from Bruce Springsteen and Norah Jones to Bon Iver and the Alabama Shakes. Trends and recording formats may come and go, but one thing remains the same: Your music will sound better if you keep the following five things in mind before sending it out for mastering.

1. Love Your Mixes

Work as hard as you can to get your mixes to sound *exactly* how you want. Don't assume your mastering engineer can read your mind and make things happen in your mixes that you couldn't get around to doing yourself. He or she will attempt to give you back a product that more vividly mirrors what you've already created, so create something you're proud of.

2. Think Like You're Ordering Chinese Food

You don't leave it to the waiter to decide how spicy you like your food, so why would you assume that your mastering engineer knows how loud you want it? Tell your engineer what you're looking for in terms of overall levels, and when possible, refer to recordings that provide a similar sonic imprint.

3. Supply *All* the Files

Loop your mastering engineer into your process by providing him or her with all of the mixes you've been listening to. This includes any "pumped-up" listening copies that have become the standard of late, but also the raw mixes without level maximizing if they exist.

4. Go to the Session

Even if you just sit and watch, attending the mastering session allows your mastering engineer to become part of your team. The most casual conversation can help reveal your musical tastes and also give direction as to how to best treat your mixes. Also, seeing how your engineer approaches your work can help improve your own mixing skills next time around.

5. You're Finished When You're Satisfied

Some people hire a mastering engineer to put his or her sonic mark on their music. Others make numerous revisions until they hear what they're looking for. When creating art, there's no one "correct" way to achieve results. Sometimes the road is more difficult than other times, but there's beauty in the process and great satisfaction in getting to the finish line. So never be afraid to push until the very end.

Greg gives us a studio tour and talks about what *not* to bring to the mastering engineer in these videos.

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